Avoid layoffs by learning to "Crunch Numbers, Not People." Leadership Series, following page 40

# COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
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## The secret is out.

You're in IS as much for the techno-toys as for the joy of tape backup. With that in mind, *Computerworld* checked out some cool products that might fill out this year's Christmas list or fit into your plans for 1997. Digital cameras and new links to the Internet will appeal to your corporate side. But Nintendo 64, virtual-reality headsets and other games will appeal to the kid in you.

Buyer's Guide, page 104

# High-end PC hype

▸ *Users slow to adopt 200-MHz Pentiums*

*By Laura DiDio, Patrick Dryden and April Jacobs*

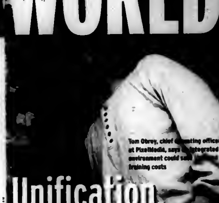
VENDORS MAY BE PUSHING the latest high-end PCs and client/server applications, but users aren't rushing out to buy 200-MHz machines or install 32-bit applications just yet.

Barry O'Neil, general manager at CompUSA, Inc. in Woburn, Mass., said systems with 133- and 166-MHz chips are the company's biggest sellers.

O'Neil's observation jibes with responses from most of the dozen users interviewed last week by *Computerworld*. They said they are migrating mostly to 133- and 166-MHz chips in the short term.

High-end PC hype, page 135

**PC shoppers are holding off on migrating to 200-MHz Pentiums, citing not enough performance boost**



**Tom Obrey, chief operating officer at PixelMedia, says an integrated environment could save training costs**

# Unification, developer-style

▸ *Microsoft to integrate app dev environments*

*By Sharon Gaudin*

MICROSOFT CORP. is readying a single environment that will let programmers use multiple languages and tools to build applications, *Computerworld* has learned.

Developers and analysts said the new environment — known by the code name Boston — could save a huge amount of application development time. It also could reduce the level of language training developers must undergo and increase component reuse in corporate applications.

Today, developers often use three or more languages and tools, each with its own environment, to build a single complex application. That means a developer must know several languages or work within a team.

Microsoft is expected to unveil the environment at its Developer Days conference March 19, according to several sources close to the company. Microsoft declined to comment further.

But developers had plenty to say.

"It would be awesome. It would stop us from shopping around," said Tom Obrey, chief operating officer and co-founder of PixelMedia, Inc., an interactive media design and production company in Portsmouth.

One-stop shop, page 17

# Sybase users losing confidence in turnaround

*By Craig Stedman*

USERS WHO HOPE to see a revamped and recharged Sybase, Inc. are waiting. And waiting. But an increasing number have given up and switched to Sybase's database rivals, according to a tracking survey by the Computerworld Information Management Group.

The survey reveals that Sybase is losing far more customers to its competitors than it is taking from them — a complete turnaround from a year ago (see chart, page 16). Likewise, the percentage of respondents who listed Sybase as their primary database vendor for the future declined from 11% in the third quarter last year to 8.4% in this year's third quarter, the survey shows.

Sybase executives didn't dispute the survey results. But five months after major financial

Sybase, page 16

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Trade pact will phase out high-tech duties. Page 3

## Nonprofits do IS

AND OFFER LESSONS FOR CORPORATE MANAGERS. PAGE 6

UPFRONT

# Ouch!

Just when you thought it was safe to start pounding that keyboard, repetitive stress injury (RSI) has bared its teeth again. This time IS folks should pay attention.

A federal jury in Brooklyn, N.Y., last week awarded damages — $5.3 million against Digital — to a user who suffered carpal tunnel syndrome allegedly from using a keyboard. Granted, another RSI case against IBM went the opposite way the very same week (see story, page 4), but the precedent of that substantial damages award is chilling for the computer industry.

Until now, RSI claims have failed to exact a penny of court-ordered damages, despite more than a decade of debate.

IS professionals should worry about this because RSI is a serious issue. The Bureau of Labor Statistics says 41,000 people lost work time as a result of carpal tunnel syndrome in 1993, the most recent year for which there are records. That's a small fraction of the people who would probably claim RSI if they could win damages.

Two members of *Computerworld*'s 70-person editorial staff have lost work time in the past year as a result of RSI. I know of two other computer journalists who have similar problems. One loses a month out of nearly every year to undergo surgery just so he can keep working.

**The pain is so agonizing that they wouldn't want to type**

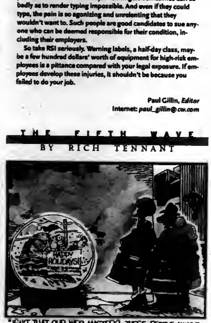
Those who don't suffer from RSI may dismiss those who do as whiners. But talk to a carpal tunnel syndrome victim, and you will hear a different story. Their fingers sometimes curl so badly as to render typing impossible. And even if they could type, the pain is so agonizing and unrelenting that they wouldn't want to. Such people are good candidates to sue anyone who can be deemed responsible for their condition, including their employers.

So take RSI seriously. Warning labels, a half-day class, maybe a few hundred dollars' worth of equipment for high-risk employees is a pittance compared with your legal exposure. If employees develop these injuries, it shouldn't be because you failed to do your job.

**Paul Gillin, *Editor***
**Internet: *paul_gillin@cw.com***

THE FIFTH WAVE

BY RICH TENNANT


HAPPY HOLIDAYS!

"ISN'T THAT OUR WEB MASTER? THESE PEOPLE ALWAYS FIND A CREATIVE WAY TO INTERFACE."

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OPERATING SYSTEMS

# Outlook bleak for NASA's Macs as safety concerns are rejected

*By Lisa Picarille*

MACINTOSH USERS at NASA's Johnson Space Center (JSC), who have been on a yearlong mission to save their Macintoshes from being jettisoned, may soon be launching Windows 95 from their desktops.

After a monthlong investigation, NASA's Office of Space Flight Safety and Mission Assessment last week rejected arguments from users of Apple Computer, Inc.'s Macintosh that switching to PCs would compromise flight safety.

### COST/BENEFIT ANALYSIS

NASA Deputy Chief Information Officer Don Andreotta said the ruling opens the door for JSC to purchase additional PCs — provided that they comply with current regulations and that necessary cost/benefit analyses are performed. JSC already has more than 7,500 PCs.

But Carl Franklin Jr., a NASA contractor, said he disagrees with the ruling and claims there are still potential safety problems associated with forcing users off the Macintoshes.

"Curve-fitting an orbit is not the same as getting your [electronic mail]. Taking people that deal with trajectories and forcing them to use the same computers that are used by the administrative staff is ridiculous. If we screw up, someone could die," Franklin said.

Macintosh users also argue that space flight safety would be compromised because several Macintosh-only databases, including one containing 10 million records on the histories of space shuttle parts, won't run on the PC. These databases are key if there are malfunctions.

However, there are still some issues to be resolved before JSC CIO John Garman can proceed with the move to Microsoft Corp.'s Windows 95. JSC's Macintosh users won a small victory last month when the Office of the Inspector General (OIG) released a report charging that Garman's move to use Windows 95 as the standard desktop platform wasn't cost-effective and didn't take users' requirements into consideration [CW, Nov. 18].

The OIG report also added that "prudent technical and management judgment was not exercised."

Space shuttle launch

**Political battles within NASA may determine the future of the space agency's computing**

In addition, the OIG determined that Garman's decision to move to a single platform was out of line with NASA's information technology policies that support the use of both Macintoshes and PCs. "Basically, we endorse heterogeneous environment policies," Andreotta said.

However, the OIG has no enforcement authority, and Macintosh users will have to wait until this week for NASA CIO Ron West's plan of action, which addresses the four recommendations outlined in last month's OIG report. A follow-up report is due March 7, 1997.

**PCs TAKE OFF**

**Hardware at NASA's 13 facilities**

| | |
|---|---|
| PCs | 45,000 |
| Macintoshes | 25,000 |
| Unix servers | 10,000 |

If West determines that Garman's decision to move to a single Wintel platform didn't include all necessary cost/benefit analyses, Macintosh users would be safe for a while.

However, one NASA watcher claimed that if JSC officials want to move to Windows, they can make it happen, in spite of the user uprising.

"Politics inside of NASA are vastly more fierce than outside of NASA," said Keith Cowing, president of Reston Communications, which publishes "NASA RIF Watch," an online newsletter in Reston, Va. "Civil servants can use passive resistance. But this issue comes down to being personality-driven, and if someone [in charge] wants to make it happen, it will."

Some JSC insiders, who asked not to be named, allege that in some cases, requirements are being rewritten as "desirements" to enable products that don't fulfill requirements to still be purchased.

### SHORTSIGHTED

Franklin claims JSC is being shortsighted by factoring in only lowest purchase price.

"They are picking less-efficient tools, so users are caught in a box here. They want users to work faster, better, cheaper but they are giving them worse tools. I'm a taxpayer, so I have no problems with a PC if it will save money. They may be saving money on the actual acquisition of PCs, but over time the support and maintenance costs are higher," Franklin said.

**Come visit our Web site @Computerworld**

- **COOL STUFF.** The holiday spirit: Look, admit it. We're all in it for the toys, right? This week, our staff takes a look at some of the coolest products available this season. Includes additional material not available in *Computerworld* newspaper. (www.computerworld.com)
- **LONG-DISTANCE LEARNING.** A continuing feature on the state of IS education abroad. In this installment, Eli Cohen and Elizabeth Boyd take a look at IS learning in the land Down Under. (www.computerworld.com/careers)

# You can't send mail there from here

▸ *Anti-spam efforts hinder E-mail delivery*

*By Kim Girard and Mitch Wagner*

FOR 11 DAYS in October, Eric Kimminau, an engineer at a Silicon Valley computer manufacturing firm, said he couldn't send electronic mail to anyone he knew who uses America Online, Inc.

He suspects, from the information included in his returned messages, that he was a victim of an America Online filter set up to prevent so-called spammers, people who blanket users with unsolicited junk messages.

Kimminau isn't alone. Many business and home users believe their mail is being unjustly blocked by online service filters, based on the inappropriate behavior of a few.

In the meantime, the spamming problem is nowhere near solved.

"A lot of nonspammers, including me, have been blocked by individuals because of the reputation [of an Internet service provider]," said Catherine Hampton, webmaster at Varian Associates, a medical equipment manufacturer in Palo Alto, Calif.

Hampton said her E-mail has been blocked by users who consider her Internet service provider, Best.com, to be a company that tolerates spamming.

Kimminau, whose service provider is Coast to Coast Telecommunications, said he has since tried to figure out what happened, writing many E-mails to America Online that were answered with form letters.

"I'm definitely not a spammer," Kimminau said. "I know what spamming is, and I know the kinds of problems it causes for [Internet service providers] and AOL and CompuServe. ... I would just like to know it's not going to happen again."

**MAKING THE BLOCK**

**America Online offers two tools with the following functions to block out junk mail**

1. **Lets members create lists of sites from which they don't want mail**
2. **Enables users to receive E-mail only from those on a specified list; all others will be blocked**

An America Online spokesman didn't address Kimminau's case but said those accused of sending mass unsolicited mail always receive an E-mail warning from the company.

To combat the problem, America Online recently began to offer PreferredMail, a service that lets customers selectively filter E-mail by using a list of accused spammers.

"We're being very careful about [whom is placed on the list]," said Andrew Graziani, a spokesman at America Online in Dulles, Va. "We're basing this on member complaints."

There are two ways to prevent junk E-mail delivery. Mail from certain sites or individuals can be filtered by the client, or America Online can filter mail from suspected spammers at the source.

Although there's a chance that some customers are filtered unjustly, there are usually two sides to a spamming story, said Bob Metcalfe, vice president of technology at International Data Group, Inc.

But tackling the spam problem with filters alone isn't the answer, he said. "Postage for every E-mail sent would solve the problem," he said. "One of the problems with things being free is it's grossly overused."

Hampton said it would be a better idea to charge a quarter per unsolicited E-mail and not penalize legitimate users.

An informal online group that Hampton runs from her World Wide Web site discusses how to curb illegitimate commercial use of the Internet without limiting freedom.

"AOL is not the problem. They're one large company dealing with a humongous problem," Hampton said.

## About two years ago,
## Joe Love's job was outsourced. And he couldn't be happier.

**"I get the feeling ... that I am contributing to the bottom line of my company," says Love, a Dallas-area information systems professional who now works at an outsourcing firm.**

**"I've gone from being part of a cost center to someone who actually generates revenue."**

**Like many outsourced IS professionals who continue to do the same work at their former employer, Love was suspicious at first and anxious about the motives of his new employer. But he and others have found that outsourced IS professionals can have more fun.**

**For more, turn to Managing, page 95.**

# Trade pact could boost computer sales

*By Patrick Thibodeau*

COMPAQ COMPUTER CORP. pays more than $100 million in worldwide tariffs each year. Digital Equipment Corp. paid more than $30 million in tariffs last year.

But both companies, along with thousands of other U.S. information technology firms, should eventually be free of customs tariffs. That's because the International Trade Agreement (ITA) was approved Friday. Twenty-eight countries have signed it, and six others have pledged to do so.

Ending tariffs on high-technology and telecommunications products will reduce equipment prices in overseas markets and spur sales, several computer industry representatives said.

The agreement "translates into making it easier for customers to buy our products," said Thomas Ehrgood, international trade counsel at Digital.

The U.S., the European Union, Canada, Japan and most of the members of the Asian-Pacific Economic Cooperation forum support the agreement.

The American Electronics Association (AEA) says the U.S. exports about $80 billion in IT products to countries covered by the agreement. Foreign customers paid about $5 billion in tariffs.

"All this is good news in terms of additional jobs," said George Sollman, head of the AEA and chairman and CEO of Centigram Communications Corp. in San Jose, Calif. Sollman's company, which makes communications servers and applications, will benefit from the treaty, he said, although the effects will be gradual.

The agreement will phase out tariffs in four steps between July 1, 1997, and Jan. 1, 2000, in almost every high-tech area: computers, printers, fax machines, most electronic office equipment, semiconductors, software, telecommunications and hundreds of other products.

The agreement may keep manufacturers from locating plants in countries with high tariffs to escape those export costs. "It'll enable companies to manufacture more from where they are located, because the trade barriers abroad will be lower," said Robbins Pancake, international trade manager at Hewlett-Packard Co.

# Tools ease NetWare tasks

*By Patrick Dryden*

NETWARE SERVER administrators can get help automating most file-system management chores across tens or hundreds of systems when two vendors update their tools this week.

Version 2.0 releases of TaskMaster from Avanti Technology, Inc. in Austin, Texas, and Snap-In AutoAttendant from Snap-In Softools, Inc. in Tucson, Ariz., boost their ability to schedule and execute the console commands required to maintain servers that run Novell, Inc. NetWare 3.x and 4.x. That frees administrators from having to manually manage files, accounts and NetWare Loadable Module (NLM) programs on individual servers.

**NETWORK MANAGEMENT**

"Great. We're trying to find tools to help us do more with fewer people," said Johnny Olivas, a network administrator at the information technology center of Phillips Petroleum Co. in Houston.

Avanti's TaskMaster can do the following:

- Examine, prune, back up and distribute files.
- Unload NLMs to free memory and reload them when needed.
- Close files, clear idle connections and shut down processes to enable complete backups.
- Do database maintenance during off-hours.

It costs $450 per server.

Snap-In's AutoAttendant integrates with Novell's NWAdmin tool to do the following:

- Copy, update and distribute files.
- Designate one server as a reference for replication to the others.
- Compare source and target files before completing an update.
- Synchronize tasks among servers and track schedules to verify task completion or find problems.

AutoAttendant 2.0 costs from $99 for one server to $20 per server in a 500-server license.

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A YEAR OF CHANGE
Kmart's Don Norman has led a bid to improve ordering systems by drawing IS talent from their retailers.
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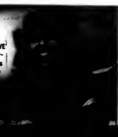

ORACLE GOES NEGATIVE
But its cries that Informix DataBlade modules are flawed don't worry users [illegible]
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# Conflicting rulings on carpal tunnel

*By Mindy Blodgett and Robert Scheier*

TWO RECENT legal decisions reflect the continuing confusion over workplace ergonomics, repetitive stress injuries and who is ultimately responsible.

In a first-of-its-kind decision, a federal jury in New York last week ordered Digital Equipment Corp. in Maynard, Mass., to pay $5.3 million to a former executive secretary who claimed she developed serious carpal tunnel syndrome while using a Digital keyboard.

Yet just a couple of days later, IBM won a similar case filed by a 911 operator who suffered hand and wrist injuries after using the company's keyboards.

The 911 operator sued IBM for $11 million in damages for allegedly failing to warn users of the injury potential, but the New York State Supreme Court ruled against the operator.

**APPEAL PLANNED**

Digital officials said the company plans to appeal the decision, while IBM hailed the judgment in its case.

There is currently no scientific evidence that links keyboards to repetitive stress injuries. But users said regardless of who is at fault, they hope vendors will work harder to introduce better designs.

"I think the vendors should definitely be doing more in this area," said Ron Hawkins, director of information technology at Millipore Corp. in Bedford, Mass. "More and more, as we find ourselves glued to an information appliance, repetitive stress injuries are an issue."

"Sometimes I wonder if . . . repetitive stress injuries are the asbestos workplace controversy of the Information Age."
– Ron Hawkins, Millipore

Hawkins said he wants to see keyboards made more sensitive to touch and computers with more sophisticated voice recognition. But he acknowledged the confusion about the issue.

"Sometimes I wonder if people are just moaning about stuff or if repetitive stress injuries are the asbestos workplace controversy of the Information Age," Hawkins said.

In the absence of vendor action, users are seeking their own remedies.

"A lot of our initiatives have revolved around eliminating consistent keyboard use," said Frank Armijo, manager of business development at Lockheed Martin Services Co. in Richland, Wash. "We are very heavily safety conscious, so it's something our safety manager has been talking about for several years."

Lockheed's Frank Armijo: **The company has worked toward eliminating consistent keyboard use**

For example, Lockheed replaced a word processing group that spent all day keying in time cards, he said. In its place the company has an automated time information system in which workers input their own time card information.

In the IBM case, the finding in the company's favor "supports our position that there is no causal link between keyboard use and repetitive stress," said Fred McNeese, an IBM spokesman.

He said that although IBM "follows the scientific studies" on ergonomics, it doesn't plan to start issuing warnings with its keyboards, as Compaq Computer Corp. does.

Marvin Dainoff, a professor of ergonomics and a consultant at Miami University in Oxford, Ohio, said he hopes the Digital judgment would prompt vendors to focus on the issue and fuel further research into ergonomics.

"While science hasn't proved a link between keyboards and carpal tunnel syndrome yet, science hasn't disproved it either," Dainoff said.

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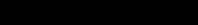

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# Nonprofits rely on IS innovation

▸ *Limited resources spur creative solutions to technological problems*

*By Tim Ouellette*

NONPROFIT WORK still involves volunteers, a helping hand and a cup of coffee, but computer technology now has a major part in the effort.

Information systems staffers at nonprofit organizations aren't only planning larger and more wide-ranging projects, but they are also working with limited budget and resources.

For example, the Atlanta chapter of the American Red Cross has created a data warehouse that runs on a RISC-based AS/400 system. The database helped the chapter reduce administrative costs from 24% to 9% of its budget and gives the Red Cross information that lets them contact the right people at the right time when disaster strikes.

"All disasters are run on computer now," said Dee Kellogg, chief information officer at the Atlanta chapter.

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As a result, these groups may find themselves getting a very early start with new technologies.

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→Have a clear technology plan and detail what each new computer system will do for the staff because the nonprofit often depends on donations.

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→Learn to integrate all sorts of systems they receive as donations.

## S H O R T S

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# Nonprofits rely on IS innovation

▸ *Limited resources spur creative solutions to technological problems*

*By Tim Ouellette*

NONPROFIT WORK still involves volunteers, a helping hand and a cup of coffee, but computer technology now has a major part in the effort.

Information systems staffers at nonprofit organizations aren't only planning larger and more wide-ranging projects, but they are also working with limited budget and resources.

For example, the Atlanta chapter of the American Red Cross has created a data warehouse that runs on a RISC-based AS/400 system. The database helped the chapter reduce administrative costs from 24% to 9% of its budget and gives the Red Cross information that lets them contact the right people at the right time when disaster atrikes.

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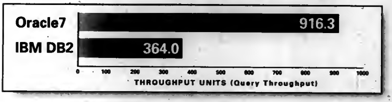
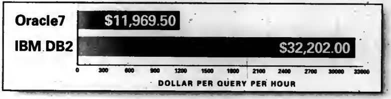
# Oracle7 Parallel Server: Almost 3 Times Faster than IBM DB2/Parallel Edition

The TPC-D is the industry standard benchmark for measuring query performance on large complex databases. On the fastest hardware that IBM makes, the RS/6000 SP, running against an identical 300 GB data warehouse, Oracle7 Parallel Server's TPC-D performance was almost twice as fast with almost three times the throughput as IBM's own DB2/Parallel Edition. What's even more amazing, Oracle delivered this performance at nearly one-third the price.

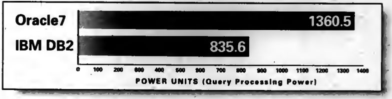
**Almost 3 to 1 Faster Multi-user Throughput**



**Almost 3 to 1 Cheaper Price Performance**



**Almost 2 to 1 Better Single User Response Time**



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# Green-light special: IS reviving Kmart

*By Thomas Hoffman*

WHAT A DIFFERENCE a year makes.

Last February, Kmart Corp. was teetering on the brink of bankruptcy, placing strategic technology projects on hold and watching helplessly as valuable information systems executives bolted for the exits [CW, Feb. 5].

Since then, new management has helped the discount retailer turn two consecutive profitable quarters by selling $1 billion in equity and cutting costs.

And in response to lagging sales, the Troy, Mich.-based company's IS group is spearheading several ambitious technology projects to improve the merchandising mix, draw more customers and pump up revenue (see chart).

Leading the charge is Donald E. Norman, a 28-year retail systems veteran who was hired last December. He became senior vice president and chief information officer when CIO Virginia Rago left a year ago.

Norman has assembled an all-star team of industry executives such as Judith Rusch, the former director of IS at The Disney Store; David Guzman, former chief technology officer at Federated Department Stores, Inc.; and Mike Blair, former vice president of operations at Federated's Sabre Group.

Thanks to a three-tiered client/server allocation system it introduced in October in time for the holiday sales crunch, Kmart's buyers can identify and distribute the right merchandise mix more effectively to its 2,161 stores.

"Clearly, if you've got the product in stock, then you can help the customer come back," Norman said.

**FAST MERCHANDISE**

Kmart has also improved the speed and accuracy of its inventory management systems. Norman said some of Kmart's merchandise can now be replaced in 18 to 20 hours, compared with the 36 to 48 hours it used to take.

In June, Kmart began replacing all of its IBM Cobol and CICS-based financial systems with a suite of client/server systems from Walker Interactive Systems in San Francisco. The new systems, which are being installed on a mix of IBM mainframes and Microsoft Corp. Windows NT systems, are expected to help Kmart close its books just two to four days after the end of each quarter. Norman declined to say how long it now takes the company to close its books.

Kmart has no plans to migrate its Kmart Information Network II systems in its stores from Unix to Windows NT because the Unix systems "still have plenty of horsepower left in them," Norman said.

Kmart has managed to launch all these IS projects after "beaucoup" dollars were slashed from its 1996 IS budget, he said. "We have cut $500 million out of our expense overhead at Kmart, and a good chunk of that came from IS," Norman said. Analysts estimate Kmart's 1996 IS budget is $375 million.

In his first year as Kmart CIO, Donald E. Norman has assembled an all-star team of industry executives and initiated projects aimed at improving the retailer's merchandising mix and boosting revenue

Analysts say Kmart is on the right track but still has some distance to close between itself, with 1995 revenue of $34.4 billion, and $100 billion Wal-Mart Stores, Inc. Kmart's merchandise mix "is much better, due to improved merchandising systems," said Robert Berger, principal at Berger Advanced Management Services, a Hillsboro, Calif.-based retail management consultant.

But Wal-Mart "is on the forefront of inventory management and supplier relations. They're very good at opening their vendors to make the whole supply chain more efficient," said Jeff Stiely, an analyst at Kurt Salmon Associates, an Atlanta-based retail and consumer products consultancy.

Stiely pointed to Wal-Mart's yearlong Collaborative Forecasting and Replenishment pilot with Warner-Lambert Co. and several technology firms. The effort was designed to improve forecasting by sharing customer and product information between suppliers and retailers over the Internet. Wal-Mart "is very serious about this investment, and that sends a message to the rest of the industry," Stiely said.

Norman, for one, is listening. "We're not where we want to be, but we're succeeding," he said.

**Stocking up**

Kmart this year has launched a series of information technology projects designed to help the discount retailer cut costs, improve its product mix and draw customers to its stores. They include the following:

→ Implemented an in-house-developed retail stock ledger that is expected to help Kmart more effectively calculate gross profits and other accounting functions. The three-tiered client/server system will be implemented at the end of January.

→ Upgraded to its IBM Inventory Forecasting and Replenishment Modules system and tweaked the system to shorten its replenishment cycle by a full day. There are plans to shorten replenishment to 24 to 48 hours by the middle of next year.

→ Rolled out a client/server allocation system in October that was designed to place the right inventory in the right stores. Available for hard-line items now and soft goods in February.

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# MCI offers faster frame relay

*By Kim Girard*

MCI COMMUNICATIONS Corp. is boosting its frame-relay speeds and offering a managed frame-relay access device (FRAD) to help IBM SNA users track their service.

High-speed frame-relay that ranges from 3M to 12M bit/sec. is available from MCI's 500 network-access points nationwide, MCI announced last week.

Those speeds will provide an alternative to Asynchronous Transfer Mode (ATM) for network managers seeking higher bandwidth to high-traffic sites.

Pricing ranges from $2,268 per month for a 3.072M bit/sec. port speed to $5,268 for a 12.289M bit/sec. port speed.

Access to the service is provided by the local telephone company, which uses inverse multiplexing of multiple T1 circuits to provide one circuit that can offer up to 12M bit/sec. speeds.

Although 70% to 75% of all circuits to remote sites are 56K to 64K bit/sec., a large number of companies still require a higher speed link to headquarters, said Tom Jenkins, an analyst at TeleChoice, Inc. in Verona, N.J.

"For companies that have a headquarter site and are using multiple T1 connections, this is a cost-effective solution," he said. "It will save them somewhere between 25% and 50%."

Framatome Technologies, Inc. in Lynchburg, Va., saved $1.2 million last year by converting from leased lines to frame relay, said Terry Hutchens, network engineering manager at the engineering services provider to utility companies. He said the company expects to save another 20% by using single fast frame-relay connections to customer sites instead of multiple T1 lines.

"The thing we like about it is we don't have to change our equipment to ATM or [Switched Multimegabit Data Services] to get higher speeds," he said.

Hutchens said the company runs four lines at 3M bit/sec. to customer sites, has tested the service at 12M bit/sec. and is "very satisfied."

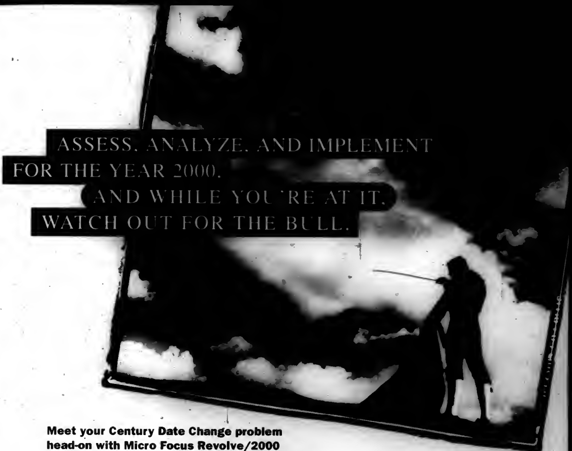
Although MFS Communications Co. and LDDS Worldcom, Inc. offer high-speed frame relay, their services are limited. Sprint Corp. is expected to add fast frame relay to its service offerings next year.

On the managed FRAD side, MCI's SNA customers can now purchase, lease or rent Sync Research products from MCI. A managed FRAD provides a single point of contact so customers don't have to manage equipment from multiple vendors. As part of MCI's WAN Managed services, Sync will maintain the FRAD equipment.

**WHO NEEDS ATM?**

Monthly rates for MCI's high-speed HyperStream frame-relay service

| Port speed | Price |
|---|---|
| 3.072M bit/sec. | $2,268 |
| 4.608M bit/sec. | $2,768 |
| 6.144M bit/sec. | $3,268 |
| 7.68M bit/sec. | $3,768 |
| 9.216M bit/sec. | $4,268 |
| 10.752M bit/sec. | $4,768 |
| 12.289M bit/sec. | $5,268 |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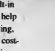

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## INTERNET WORLD '96

# Microsoft, PointCast team to 'push' Web information to users

*By Mitch Wagner*

MICROSOFT CORP. AND PointCast, Inc. announced last week that software for receiving PointCast news broadcasts over the Internet will be included in Windows 95 and Windows NT by next July.

At Internet World '96 in New York, the two companies said PointCast's client software will be part of Active Desktop, next year's version of Microsoft's Internet Explorer browser. Unlike previous versions of Explorer, Active Desktop will be able to run as the Windows desktop, replacing the usual interface in Windows 95 and Windows NT.

GM's Larry Lozon

**Push technology "is like a form of multimedia E-mail"**

The agreement adds momentum to a medium that was already becoming popular over the Internet: "push-oriented" or "broadcast" technology.

The idea is simple but powerful: Instead of waiting for users to go to World Wide Web pages on the Internet or an intranet, information systems managers can build pages that push the information from servers to users' desktops.

"It's like a form of multimedia E-mail," said Larry Lozon, senior vice president and director of General Motors Corp.'s Cyberworks business unit in Detroit, which is exploring Internet-based marketing and advertising. "It's immediate. Until now, you had to wait for a user to go back to a Web site for new information. This allows you to send directly to him."

Cyberworks has been testing a push-oriented tool kit from BackWeb Technologies in San Jose, Calif., since September.

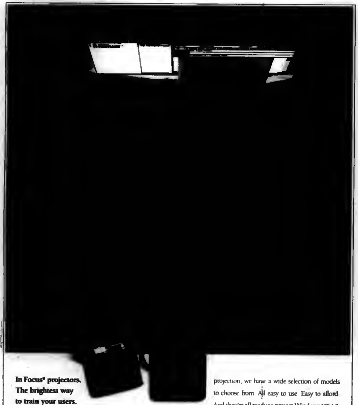
The Microsoft/PointCast alliance follows a deal from Netscape Communications Corp. last month to incorporate Castanet push-oriented software from Marimba, Inc. into its upcoming desktop software, Constellation. Marimba is a company in Palo Alto, Calif., that was founded by the inventors of Java.

### WHAT'S IN STORE

Right now, the main application for push technology is delivering news and advertising via the Internet. Developers also talk about building intranet applications to push corporate information down to users' desktops.

But those applications are just a sliver of the functionality possible with push-oriented technology, according to Forrester Research, Inc. a consultancy in Cambridge, Mass.

In the long term, the technology can be used to push programs as well as text, images and animation down to users' desktops, said Forrester analyst John Robb. It is a way to achieve true client/server computing on the desktop, allowing IS managers and software companies to develop applications that distribute themselves so that some processing occurs on the server and some on the client, he said.



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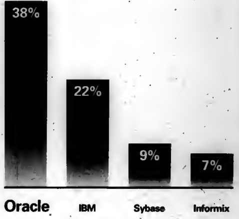

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Source: IDC, Data Warehouse Management Market, 1996.

INTERNET WORLD '96

# Microsoft, Sun add Java to Web servers

*By Justin Hibbard*

RIVALS MICROSOFT CORP. and Sun Microsystems, Inc. at Internet World '96 last week introduced World Wide Web servers that are the first to support server-side Java applications.

Microsoft announced the immediate availability of Internet Information Server (IIS) 3.0, which includes Microsoft's Java Virtual Machine.

> "When you're talking about running across different server platforms, then Java is good. But if you're using NT, all of your other code is reusable anyway."
>
> Chuck Toussieng
> principal, Alpha Information Systems

Not to be outdone by its own technology, Sun's JavaSoft division said its Java Web Server will be available in the first quarter next year and will include support for Sun's Java Servlet application programming interface (API).

**PROS AND CONS**

Users are divided between the advantages each server offers: the freedom to use any scripting language on Microsoft's server and the ability to run Java programs on any operating system.

Early adopters of the Java Web Server, code-named Jeeves, welcomed the ability to write servlets. Servlets are server-side Java applications that will run with Jeeves on any platform that supports the Java Virtual Machine.

But Microsoft users said they are more likely to use the Microsoft server's new Active Server Pages for building back-end applications. An Active Server Page tells the server to build a page that contains specific information requested by a client.

"When you're talking about running across different server platforms, then Java is good," said Chuck Toussieng, a principal at Alpha Information Systems, an Internet service provider in Temecula, Calif. "But if you're using [Windows] NT, all of your other code is reusable anyway."

Toussieng developed an application for BankAmerica Corp. in San Diego that provides insurance policy quotes to customers via the Web.

He first wrote the application in Microsoft's Visual Basic and compiled it to run on Unix. Since then, he has migrated the code to Windows NT, then to Microsoft's Internet Server API and finally to Microsoft's VBScript, he said.

After he installed the beta version of Microsoft's IIS 3.0, Toussieng embedded the VBScript application in an Active Server Page, which delivers a customized insurance quote based on data provided by the user.

"We've found that, at least for the programmers we have, you can bring someone up to speed on Visual Basic faster than on Java," Tousaieng said.

**THE VISUAL BASIC CHOICE**

Visual Basic's ease of use is one of the most compelling reasons for businesses to develop Internet applications in the language, said Clay Ryder, an analyst at Zona Research, Inc. in Redwood City, Calif.

"There's a much larger base of [Visual Basic] developers out there than Java developers," he said. "Getting everyone trained on Java is very costly."

But developing server-side Java applications brings savings to companies that build lots of client-side Java applets, Ryder added. "I can develop my client-side code using the same tools that I use to develop my server code," he said.

Java applications written to Sun's Java Servlet API will run on any operating system when used with Jeeves, which is written in Java and will also run anywhere, Sun officials said.

"[Jeeves] allows me to design code for [a Common Gateway Interface] or business processes across all platforms," said Chris Phillips, senior systems administrator at Canlink Interactive Technologies Ltd. in Kingston, Ontario. Phillips said he has reused his servlets on clients' machines, all running different operating systems.

# 'net commerce faces test

▸ *Gerstner tells IS: Challenge is retooling business processes, not technology*

*By Mitch Wagner, Sharon Gaudin and Barb Cole*

NEW YORK

COMPANIES THAT SEEK to do business on the Internet will face a greater challenge in re-engineering their business processes than they will in engineering new technology, said IBM Chairman Louis V. Gerstner last week.

"If hundreds of millions of people are going to do online banking, banks are going to have to change the way they operate," Gerstner said. He delivered the keynote address at Internet World '96 here.

To succeed online, companies will have to devote large numbers of personnel to service online customers, he said.

**NO LOYALTY**

Eric Kestler, director of systems planning and technology at Phillips Business Information, Inc. in Potomac, Md., agreed. "Everything is speeded up — the consumption of the product and service is instantaneous," he said. "And if you don't cater to the customer, they'll go elsewhere. There's no loyalty on the Internet."

But Michael Martin, a financial consultant at Smith Barney, Inc. in New York, said he hasn't seen much business re-engineering in response to the 'net.

He said his clients are more informed because of the information they collect from the Internet. "The fundamentals of investing aren't going to change," he said. "But our clients are becoming more sophisticated. They understand technical factors of investments because the Internet has really educated them."

But internally, some people are still trying to get used to the technology, Martin said.

Smith Barney a few weeks ago launched a World Wide Web site (www.smithbarney.com) that offers clients individual portfolio information, stock news and research.

Similarly, L. L. Bean, Inc. has yet to reshape its business practices in response to the growing interest in online shopping, according to Steve Roberts, senior new media analyst at L. L. Bean in Freeport, Maine.

The outdoor clothing and equipment giant started to offer electronic commerce Nov. 25 by putting 350 of its nearly 8,000 products online. It has nearly doubled its sales forecast for December, and Roberts credits some of that to the new site.

**[illegible]**

Technology is still necessary for Internet commerce, and Internet World visitors were shown a boatload of new technologies:

- Lotus Development Corp. announced general availability of its Domino 4.5 Web server, which costs $995, and beta availability of Weblicator, client software that adds Notes replication to Web browsers. Weblicator will ship by March.
- Microsoft Corp. said a public beta of the release candidate for Exchange 5.0 is available for downloading from the Web. The Exchange upgrade is expected by March.
- Oracle Corp. said [illegible] 2000 and Developer 2000 will add Java support early next [illegible]. Sedona, a development environment for Oracle8, [illegible] add Java to C++ and SQL as languages for building reusable components.
- IBM announced that OpenDoc, a cross-platform, object-oriented architecture, is adding Windows support. OpenDoc was designed to be cross-platform but momentum has been slow without support for the most popular platform — Windows.
- JavaSoft, a unit of Sun Microsystems, Inc., is trying to bolster pure Java applications with its new 100% Pure Java program. Teaming up with two other companies, JavaSoft kicked off the branding, marketing and educational program at Internet World.

# Suite hands intranet workflow to users

*By Justin Hibbard*

OPEN TEXT CORP. last week unveiled the second version of its intranet application suite, which lets users create and manage their own workflow projects.

Livelink Intranet Suite 7 lets end users create a home page for their projects by clicking a button that builds links to a threaded discussion page, a document management library, a workflow diagram and a search engine. Project managers can add users, set permissions and administer the site through a World Wide Web browser.

"It's really taking very sophisticated workflow and pushing down a lot of the logic to the user," said Ian Campbell, an analyst at International Data Corp.

Livelink relieves information systems staffers from having to administer each workgroup's intranet site and lets IS control the network, Campbell said.

Scott Chate, collaboration and document management group leader at TransCanada PipeLines Ltd. in Calgary, Alberta, said his company plans to migrate from the proprietary version of Livelink to the intranet version to give more users access to the system.

"We're looking at the new intranet version to provide some additional capabilities of cross-platform compatibility and to increase our ability to include other parties through the concept of an extranet," Chate said.

Chate said managers at his company realized the power of an intranet when they used a threaded discussion board to prepare for a meeting of far-flung executives.

# You have to migrate your company's entire system to 32-bit.

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And with minimal downtime.

Including new software.

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Reciting the Declaration

of Independence.

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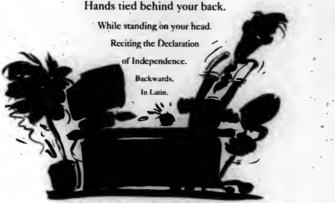
In Latin.



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SERVER PLATFORMS

# Vendor migration push may trip users

*By Jaikumar Vijayan*

USERS SHOULD beware of vendors that are trying to push them into migrating to new server platforms.

The emergence of Wintel as an enterprise-capable platform and performance gains from inexpensive commodity components are putting pressure on Unix and proprietary server vendors to shift business models.

And that could prompt vendors to force painful platform migrations on users in the next few years, according to a report released recently by Gartner Group, Inc.

### TURNABOUT

"Traditional IS in the data center did not have to worry about long-term investment protection or architectural disruptions. But all that is about to change very quickly," said George Weiss, vice president of distributed computing platforms at Gartner in Stamford, Conn. In fact, corporations should plan for no more than three to four years of architectural continuity in server platforms, Weiss said.

**SERVER ISSUES**

**In the next five years, these will be the top five considerations for choosing a server:**

- Performance and scalability
- High availability
- Software availability and vendor enthusiasm
- Level of integration required
- Architectural longevity

Source: Gartner Group, Inc. Stamford, Conn.

"Vendors in large part are responding to what they feel is the marketing push from other companies," said Brian Cuttler, a systems manager at the State University of Albany in New York.

They don't want to be perceived as being in the market with yesterday's software running on yesterday's hardware," Cuttler said.

### NT FOCUS

The Gartner report comes at a time when nearly all the major Unix and proprietary server vendors are focusing product, development and marketing muscle on Microsoft Corp.'s Windows NT.

This rapid shift to an NT-centric strategy could lead to the placement of inadequate resources on existing platforms, the abrupt dumping of current product streams and confusing integration strategies, according to analysts. Other vendor actions that analysts said could trip users include the following:

- Migration and application availability issues caused by the move to 64-bit architectures and mainframe-class servers by some Unix vendors.
- Attempts to meld Unix and Intel Corp. architectures such as the joint Hewlett-Packard Co. and Intel Merced chip.

**Typically, vendors "don't want to be perceived as being in the market with yesterday's software running on yesterday's hardware."**

**– Brian Cuttler,**
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- Vendor attempts to push new and commercially untested Intel-based enterprise servers with technologies such as Non-Uniform Memory Access, symmetrical multiprocessing and clustering.

"We are at a point in time where the Wintel architecture is increasingly being viewed as a viable alternative" for enterprise applications by users and vendors, said James Greene, an analyst at Summit Strategies, Inc. in Boston.

As a result, it is crucial for corporations that plan server migrations to ensure that their vendors offer secure bridges to move applications among platforms.

### SCALABILITY

It is also important to ensure that servers have the scalability to handle mixed and increasing workloads, according to the Gartner report (see chart at left).

Such issues "are a long-term concern for us," said Gary Spencer, an information systems director at Black & Decker Corp. in Memphis.

"But we don't see them as being an imminent problem for us right now," Spencer said.

Black & Decker runs most of its large applications on HP's Unix servers. Spencer said those servers should run for at least another three years or so.

Therefore, any server migration issues that are likely to arise won't happen before then, he said.

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# Analysts: Software costs sap sysplex savings

▸ *Mainframe hardware clustering savings may not be enough*

*By Tim Ouellette*

AS BIG-IRON users tie their mainframes together with new clustering technology, vendors are starting to make sure their software can take advantage of the extra processing capability.

Mainframe clustering, called parallel sysplex, promises to cut back on user hardware costs by allowing incremental upgrades of processing power.

The clusters use newer CMOS, or air-cooled, mainframes that take up less space and have lower maintenance and energy costs than traditional water-cooled systems.

**A typical parallel sysplex installation consists of three or four mainframes and totals about 1,200 MIPS of processing power, according to Annex Research.**

But users must watch software costs because of the need to upgrade certain pieces of software to meet clustering requirements.

And in some cases, software licensing fees are higher as more vendors move to MIPS-based pricing.

"I call it the CMOS tax," said Mike Egan, an analyst at Meta Group, Inc. in Stamford, Conn. For high-end users, the increases — especially in third-party mainframe software pricing — could wipe out IBM-based hardware savings, he said.

### USER INTEREST

Even with the software cost issues, analysts said there is a steady build-up of user interest and installation success with parallel sysplex (see chart).

User sites such as Mellon Bank Co. and Edmonton Telephone & Telegraph claim increased capacity and lower costs.

But some users are taking a wait-and-see approach to parallel sysplex. Egan said he recommends such an approach to avoid increased MIPS-based pricing.

To make the software transition to parallel sysplex as smooth as possible, vendors have announced the following plans:

- **Neon Systems, Inc.** in Sugar Land, Texas, in January will ship Affinities Server for CICSplex. The software lets CICS transaction applications work in a parallel sysplex without any reprogramming.
- **Hogan Systems, Inc.** in Dallas next fall will release a version of its financial transaction software that was specifically designed for parallel sysplex environments.
- **Hitachi Data Systems Corp.** in Santa Clara, Calif., last week announced an MVS-based software auditing service that promises to cut licensing costs by identifying unused MVS software licenses across a network.

Though not targeted at mainframe clusters, the Hitachi service could help users negotiate more favorable software licensing deals before moving to parallel sysplex. Egan said he recommends such an approach to avoid increased MIPS-based pricing.

Nine major software vendors, including Computer Associates International, Inc. and Boole & Babbage, Inc., have made or will make their packages parallel sysplex-ready, according to IBM officials.

### ALL THE PARTS

A typical parallel sysplex installation features three or four mainframes and has about 1,200 MIPS of processing power, according to Annex Research in Phoenix.

Applications have to be updated for parallel sysplex because most packages aren't geared for multiple processors.

**MOVING IN PARALLEL**

**Estimates of how mainframe shops are involved with parallel sysplex:**

| Level of involvement | Number of sites |
|---|---|
| May install parallel sysplex | 5,000 |
| Committed to parallel sysplex | 1,200 |
| Have installed parallel sysplex | 400 |
| Perform complete data sharing | 60 |

Source: Annex Research, Phoenix

For example, some CICS transactions take the same route through the CPU — called affinities — every time, said Joe Baker, president of Neon.

Neon's Affinities Server simply removes the region boundaries found in those affinities so CICS transactions can be routed to the least busy processor without expensive programming.

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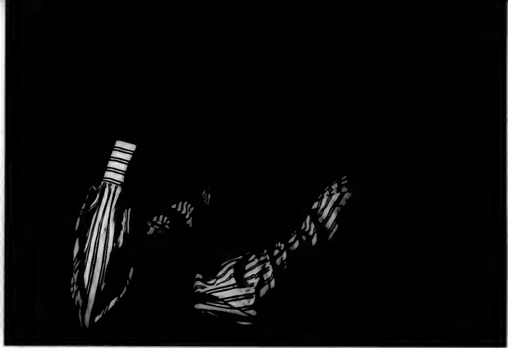

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# Sybase users are losing confidence in its turnaround

CONTINUED FROM PAGE 1

losses led to a management overhaul, they stressed that a more aggressive company will finally emerge early next year.

Even customers who remain committed to Sybase want to see that happen.

Sybase "made a lot of mistakes, and it's taking them a long time to regroup," said Alan Levine, director of information services at McCarter Theatre, a group of 11 arts organizations in Princeton, N.J.

**"When you're basically a better-mousetrap company and you don't have a new mousetrap to fall back on, you're really hard-pressed."**
**— Stan Dolberg, Forrester Research**

In the meantime, rivals such as Oracle Corp. and Informix Software, Inc. "have done a really good job of exploiting Sybase's difficulties," he said.

The arts organization is standing by Sybase's SQL Server database, which runs its ticketing and subscription systems

But the Jacksonville Electric Authority in Florida is no longer among the Sybase faithful.

The utility switched to Oracle as its database of choice and plans to move applications off SQL Server, said Chuck Jensen, director of information systems.

Jacksonville Electric soured on Sybase because of performance problems with the notorious SQL Server 10 release and the vendor's failure to keep to a promised schedule for fixing them, Jensen said.

"It doesn't look real good to your CEO and other executives when you don't meet your commitments," he said.

Despite such misgivings, the utility still gave Sybase a chance to compete against Oracle and other vendors for an integrated database/application software purchase this fall.

"But they didn't really express an interest, while Oracle was banging our doors down," Jensen said

Robert Epstein, executive vice president at Sybase, acknowledged in an interview this month that the company isn't "getting growth from the SQL Server business primarily because we've spent all of our time focused on the installed base as opposed to finding new customers."

### CHANGES IN THE WINGS

It could take another 18 months for Sybase to rid itself of the image fallout resulting from the SQL Server 10 problems and three straight quarters of losses this year, Epstein said.

But he and other executives said Sybase is finally almost ready to replace its traditional "stealth marketing" with a more aggressive approach. The new approach will be accompanied by better integration of the company's databases, development tools and middleware.

Sybase will take a small step this week by bundling the Windows NT version of SQL Server with World Wide Web development software and other tools.

A top-to-bottom strategy announcement is expected next month or in early February.

Other products on the horizon include a Web application server code-named Jaguar, middleware that links Java applets to multiple databases and Unix versions of the SQL Server bundle.

But the strategy is taking a long time to gel, leaving Sybase "kind of a no-show" in new markets such as the Web, said Stan Dolberg, an analyst at Forrester Research, Inc. in Cambridge, Mass.

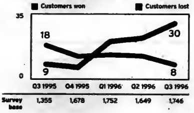
"When, you're basically a better-mousetrap company and you don't have a new mousetrap to fall back on, you're really hard-pressed," he said.

Sybase's products remain solid, "but the perception is that they're on a downward slide," said Joe Durocher, chief information officer at Hilton Hotels Corp. in Beverly Hills, Calif.

The problems at Sybase made it tough to persuade Hilton's management to stick with SQL Server when the company reviewed its database choice last summer, he said.

**THE GOING GETS TOUGH**

**Number of database customers Sybase has won from competitors compared with the number it has lost**



Source: Computerworld's Information Management Group

Oracle's campaign to cast doubt on Informix falls flat with some users. Page 55

# Vendors' PowerPC strategies rest with fate of Mac OS upgrade

*By Lisa Picarille*

ANALYSIS

RUNNING WINDOWS NT on PowerPC chips was expected to be the savior of the PowerPC platform. But now it is unclear whether PowerPC backers IBM and Motorola, Inc. will even continue to offer that option.

**An estimated 4.2 million PowerPC-based desktops will ship this year, according to International Data Corp.**

The uncertainty may clear up — for both users and vendors — when Apple Computer, Inc. unveils its Macintosh operating system strategy Jan. 7.

The PowerPC Platform, formerly known as the Common Hardware Reference Platform (CHRP), was supposed to support multiple operating systems, including Apple's Mac OS, Microsoft Corp.'s Windows NT, Sun Microsystems, Inc.'s Solaris and IBM's AIX.

Because Apple leads the PowerPC charge — with 90% of PowerPC system sales — it seems that PowerPC partners IBM and Motorola are stuck on hold until Apple reveals its plan.

The lack of a mass-market operating system has delayed delivery of CHRP systems until the middle of next year. They were originally due the middle of this year.

The delay cost Apple one of its biggest users. Lockheed Martin Missiles & Space stalled a move to Windows for more than a year because it was waiting for CHRP.

But this month the Sunnyvale, Calif., aerospace giant — with more than 9,500 Macintoshes — decided to phase out the Macintosh.

"Lockheed would not be standardizing on NT if Apple had come out with CHRP two years ago when they first predicted it would be out," said Mike Bailey, a systems analyst at Lockheed.

"CHRP would have taken the market by storm back then. But now NT on the PC has thousands of applications, and NT on the PowerPC has virtually none. That makes NT on CHRP irrelevant and not mainstream," Bailey said.

To date, Apple has failed to deliver a Mac OS version that runs on CHRP, although it is expected to ship a PowerPC version of System 7.6 in March.

Beyond that release, most users and industry watchers bet Apple will buy or license Be, Inc.'s BeOS operating system and meld it with parts of Apple's stalled Mac OS project, code-named Copland.

### A REAL CHOICE

The result would be Apple's next-generation Mac OS for the PowerPC, which could be a powerful alternative to Windows NT on both the Intel and PowerPC platforms.

Because IBM and Motorola are shipping PowerPC machines running NT, Apple's potential support of the BeOS could throw a monkey wrench into their NT plans.

IBM has found that sales of its AIX-based PowerPC RS/6000 products make up 90% of its workststion sales.

But the low demand for NT on IBM workstations — coupled with Apple's potential move to the BeOS — may force IBM to halt its support for NT on PowerPC, IBM sources said.

"IBM is in a quandary," said Jim Garden, an analyst at Technology Business Research in Hampton, N.H.

"It's very unclear what will happen to NT on PowerPC. If Apple puts all its force behind Be, then IBM will have to join in," Garden said.

Because Motorola is the main PowerPC chip maker and sells most of those chips to Apple, it has little to lose no matter what Apple decides.

But if Apple goes with the BeOS, the Motorola Computer Group's sales of NT PowerPC computers could decline, observers noted.

**POWER AHEAD**

**What's ahead for the PowerPC Platform**

| | |
|---|---|
| January | Apple will announce Mac OS strategy |
| March | Apple's System 7.6 for CHRP ships |
| Mid-1997 | First wave of CHRP machines ships |
| Late 1997 | PowerPC-based Java Virtual Machines due |

# One-stop shop for app tools

CONTINUED FROM PAGE 1

N.H. "Not one person can learn all these different environments. To get a distributed, single development environment would save huge amounts of time and money."

Obrey estimated that he could save 30% to 40% of his application-building time by using one integrated environment.

"Four-wheel drives are better in the woods, and race cars are better in the streets. No one tool is good at everything," he said.

**LESS TO LEARN**

Dan Budimir, a senior software engineer at AlliedSignal Aerospace in Columbia, Md., said having an integrated environment would mean less training — and fewer training expenditures — for his developers. "A consistent user interface is a great advantage," Budimir said. "It's like asking my employees to learn [just] Spanish compared to asking them to learn Hindi, Spanish, French and Latin."

> **"A consistent user interface is a great advantage."**
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Sources familiar with Microsoft's plans said the environment will have a common look and feel for many aspects of the development process, including class libraries and graphical development tools. Developers, for instance, would use a common graphical tool to build applications. When they move on to language-specific tasks, such as writing a complex routine in algorithms, they could then use the language of their choice, whether it is Visual Basic, C++ or Sun Microsystems, Inc.'s Java.

Without an integrated environment, developers have to work with a specific tool for the graphics creation and then write the code in another language.

**MORE CONTROL**

David Kelly, an analyst at Hurwitz Group, Inc. in Newton, Mass., said if Microsoft can make this work, developers could have better control over their projects.

"If all the code is unified with common libraries and graphics components, it's easier to leverage it across projects and increase [software component] reuse," he said.

David Lingren, director of advanced development at DunsGate, a subsidiary of The Dun & Bradstreet Corp. in New York, said Microsoft has been heading in this direction by increasingly tailoring development tools to mirror one another.

"They have been moving, in a number of releases, to try to bring the integrated development environment into a common look and feel," Lingren said. "It's a consistent way of looking at source code, of browsing through OLE objects, a consistent code editor."

Microsoft's Internet Studio, released in October, came close to this by offering an integrated environment in which to write World Wide Web applications. The new environment, however, wouldn't be limited to the Internet.

Developers said the benefits are more than saving time and money.

"It's about flow. It's creativity," said Pat Tormey, an engineer and owner of Foursquare Solutions, a development company in Derry, N.H. "You have to get your programming done when the juices are flowing. You don't want to have any artificial interruptions. Usually switching languages does that."

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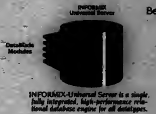

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# Mylex-embedded storage devices make RAID grade

*By Matt Hamblen*

MYLEX CORP. plans to announce three RAID storage control devices today, two that it hopes will be embedded for the first time by server makers.

Adaptec, Inc. in Milpitas, Calif., also is working on a variation of the same embedded technology. But Mylex in Fremont, Calif., seems to be the leader in the market for RAID controllers, said analyst Jim Porter, president of Disk/Trend, Inc. in Mountain View, Calif.

Storage control devices currently are sold as add-in boards to nearly all server manufacturers and integrators.

"It's probably a very good competitive move, since Adaptec has been moving in the same direction," said Phil Devin, a chief analyst at Dataquest in San Jose, Calif.

Users will benefit from the technology being embedded in servers because it will be easier and possibly cheaper to move to the RAID format, Mylex officials and analysts said.

Mylex's RAID storage control device

The Mylex announcement shows that RAID technology for backup of data is pervasive and should become more so with embedded RAID devices, analysts said.

"There was zero RAID in 1990, but in six years, 70% to 75% of servers on enterprise system networks have RAID capability. The trend is continuing upward so that we'll approach 95% by the end of the century," Porter said.

It is partly because of RAID's dominance that Mylex developed the embedded controllers, company officials said. Having embedded controllers in PC servers could be a strong motivation to cost-cutting manufacturers, Porter said. But Devin said manufacturers might not adopt the Mylex technology unless it provides "really great cost savings."

The Mylex products will be available early next year, but Porter said the embedded products might not be in servers for a year or two. Mylex plans to include a next-generation add-in controller board, the DAC960PG, that can be used for all server levels. It will cost up to $1,350 for a three-channel configuration.

The DAC960PC would be used in entry-level to midrange servers. It will cost $950. The other embedded controller, called Rome, would be used for midrange and some enterprise servers and will cost roughly half the price of the DAC960PG, company officials said.

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# Calling all webmasters

*By Patrick Thibodeau*

A FEW DAYS AGO, Bob Koche sent out electronic-mail invitations to the first meeting of the Webmasters' Guild Bay Area chapter to be held on Dec. 18. He was overwhelmed. "It was like one of those movies where they bring in the bags of mail to the courtroom," said Koche, chapter president. "We filled our meeting room in three days."

The nonprofit, Cambridge, Mass.-based Webmasters' Guild was organized in 1995 to establish professional standards and set policies on the legal, ethical and technological issues that affect webmasters. The group doesn't charge dues, and it doesn't restrict its membership to people with specific job titles. "The ultimate goal is to truly represent the voice of the webmaster community, the webmaster profession," said Matthew Cutler, the group's founder and president.

The guild has roughly 1,500 members through its mailing list. The Bay Area chapter will meet at Netscape Communication Corp.'s office in Mountain View, Calif. The guild's World Wide Web address is www.webmaster.org.

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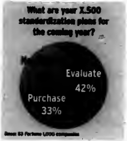
# Aussie vendor offers scalable directories

*By Barb Cole*

DATACRAFT LTD. last week announced a suite of directory service products aimed at companies that seek to track large numbers of users in a corporate address book.

The Australian company, which previously sold its directory to OEMs in its native land, is moving into the U.S. market. By doing so, the company will go head-to-head with X.500 heavyweights such as Control Data Systems, Inc., ICL Enterprises, Inc., Unisys Corp and WorldTalk Corp.

DX500 OpenDirectory complies with the Lightweight Directory Access Protocol and is based on X.500, an international standard that defines how information is tracked in messaging directories.



Source: The Radicati Group, Inc., Palo Alto, Calif.

DX500 uses a SQL database to track user names and associated information and can return entries from large directories in just a few seconds, users who have developed enterprise directories around the software said. In contrast to the SQL approach, most X.500 offerings use a flat-file system that can get bogged down when it is loaded with names.

"We did some benchmarking [of X.500 directories], and [DX500] came out on top," said Max Montanaro, manager for electronic commerce services at Optus Communication Ltd., a telecommunications company in Sydney, Australia. Optus is tracking about 20,000 entries in a directory that is the basis of an electronic commerce service aimed at businesses.

### SCALABILITY ISSUES

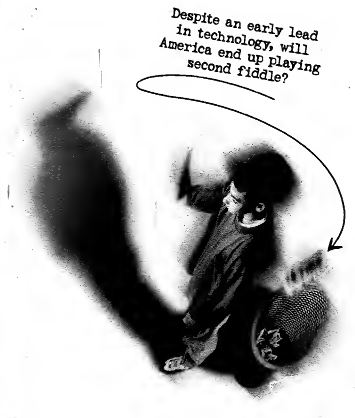
Montanaro said the telecommunications firm's benchmarks show that DX500 will scale to support up to millions of entries.

Directory scalability is becoming more important as information systems shops seek to build directories over the Internet that include listings from trading partners and other sources.

"[Datacraft] has focused on a key issue surrounding X.500 — performance," said Nina Burns, president of Creative Networks, Inc., a consultancy in Palo Alto, Calif. Building an X.500 directory on top of a SQL database makes sense, Burns said.

Besides improving performance, the DX500 product could address another key issue with X.500 directories, users said. Typically, it is difficult to modify the format of directory entries once the directory is built, Montanaro said. But because it is based on SQL, DX500 is flexible in this regard, he said.

The DX500 directory is available now and costs $24,000 per server.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A FEW WORDS FROM KENT LANE, V.P. POST SALES OPERATIONS AT METRIX, ON WHY UNIFACE IS THE ANSWER FOR BUILDING BUSINESS-CRITICAL, 7 x 24 CLIENT/SERVER APPLICATIONS.

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UNIFACE *WHAT THE BIG GUYS USE*

# Shareholder value fuels Du Pont's $4B, 10-year outsourcing deal

▸ *Company hopes to pump savings into new business ventures*

*By Thomas Hoffman*

AS PART OF its push to double shareholder value by 2002, The Du Pont Co. last week announced plans to outsource its global information systems and technology infrastructure.

In what analysts have described as the largest outsourcing deal to date, Andersen Consulting and Computer Sciences Corp. (CSC) will split the 10-year, $4 billion job.

When Du Pont earlier this year announced plans to explore IS outsourcing, Chief Information Officer Cinda A. Hallman said the company regarded its IS operations as best-of-breed and wanted any vendors it selected to deliver more than just information technology services.

Du Pont wants a return on IT equity, said Christian Meyers, an analyst at Ga Research, Inc. in Mountain View, Calif.

Hallman said the deal is expected to reduce Du Pont's IS costs by between 5% and 10% — considerably less than the cost savings of between 15% and 20% typically generated in mega-outsourcing deals. That is largely because Hallman was able to reduce IS expenses by 40% in the past three years.

"We expect to achieve a much higher degree of variability" on IS costs, said Hallman, who went to great lengths to avoid the word "outsourcing."

Hallman said she hopes the alliance with CSC and Andersen will let Du Pont cut its IT costs and pump those savings into new businesses where it continues to diversify, such as those in the Pacific Rim.

"We're all the way to having a hosiery store in China. That's much different" than our past approach of making only the raw materials, Hallman said.

**STAFF MIGRATIONS**

Under the deal, which will take effect in the second quarter of next year, Du Pont will transfer 2,600 of its 4,200 IS employees to CSC. The El Segundo, Calif., systems integrator, which has acquired Du Pont's 13 data centers under the agreement, will migrate the chemical and energy giant's 30 business units to SAP America, Inc. R/3 business software.

Another 500 IS staffers will be offered positions with Andersen, which will develop chemical and energy applications for Du Pont.

About 1,100 IS professionals will remain at Du Pont to manage the relationships with CSC and Andersen and develop core applications, such as process monitoring, research and development, and selected business programs.

The Du Pont deal is unique in that the Wilmington, Del.-based company will assert strong managerial control over all IT decisions carried out by the vendors.

"It appears that Andersen and CSC will remain suppliers, cooperators and competitors for new business", under the Du Pont agreement, said George Logemann, an analyst at The Yankee Group in Boston.

About $400 million of Du Pont's $690 million IS budget will go to CSC and Andersen. The rest will be used to pay its remaining staff and support the application development it is retaining.

Over the length of the agreement, $550 million will go to Andersen and $3.45 billion to CSC.

"We never have enough SAP skills."
– CINDA A. HALLMAN
CIO DU PONT

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# Security experts warn of Christmas Day hack attacks

*By Patrick Thibodeau*

THE SAN DIEGO Super Computer Center (SDSC) isn't expecting a jolly man bearing gifts to come down the chimney on Christmas Eve.

Instead, the agency anticipates an increase in "doorknob twisting" — attempts to achieve what hacker Kevin Mitnick did on Dec. 25 two years ago.

Mitnick allegedly broke in to computer security researcher Tsutomo Shimumora's computers at the SDCS. The SDSC monitors its computers 24 hours a day, but Shimumora's computers weren't part of the SDSC security system.

> Computer networks and World Wide Web sites may be at greater risk of attack from hackers during long holiday periods

**TRYING OUT THE GIFTS**

This year's break-in attempts will begin in earnest at roughly the same time hackers are probably bringing their new Christmas gifts on-line.

"We definitely see increases on the holiday, beginning on Christmas day at about 3 p.m. Eastern Standard Time," said Thomas Hutton, network and security architect for the supercomputer center.

But Hutton, along with others involved in computer security, isn't surprised by the doorknob twisting on holidays when many systems administrators are on vacation.

"I would imagine that there is probably more [physical] burglary during holiday periods as well," he said.

A San Diego Police Department spokesperson agreed. The holidays do spur a "marginal increase" in burglaries, he said.

Computer networks and World Wide Web sites may be at greater risk of attack from hackers during long holiday periods, according to a number of computer security professionals.

Their supporting evidence isn't based on statistics, surveys or reports; it's anecdote, gut feeling and experience.

The lead anecdote is the Shimumora break-in, followed by the network break-in at General Electric Co., also that year.

The gut feeling is similar to what some police officers and nurses say about a full moon. "They will tell you for sure that the night of the full moon is their busiest time," said Richard Power, a senior analyst at the Computer Security Institute in San Francisco. The holiday break "is the cyberspace equivalent of that," he said.

The fear of holiday vulnerability is also grounded in crime-fighting experience.

"People who tend to break in to systems are going to try to do it when they're not going to get caught, and clearly, if network administrators are on vacation it lessens the opportunity of getting caught," said Jim Settle, a retired FBI agent who headed the National Computer Crime Squad from 1992-94 and now runs an information security firm in Springfield, Va.

But Settle said his experience with the FBI shows that 80% of all computer break-ins go undetected by network administrators.

Many companies do little to protect their data or check audit logs for unauthorized network access, he said.

## Security tips

Walsh-Lowe & Associates' Yun Choi

**"There is no absolute about security"**

**Santa isn't the only one with a list to check this holiday season. IS workers should make sure they aren't leaving any presents for hackers: easy access to their company's systems.**

**"There is no absolute about security, but there are a lot of things you can do to make a hacker's life difficult," said Yun Choi, director of network security at Walsh-Lowe & Associates in Hoboken, N.J.**

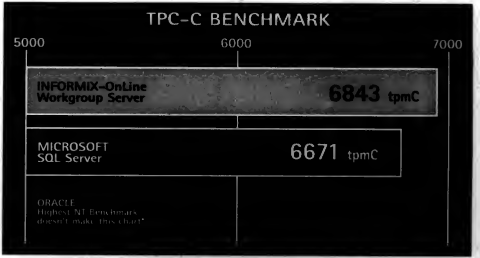
**Choi has developed a list of security vulnerabilities and suggestions to keep would-be grinches at bay.**

**One major point of network vulnerability is holes in electronic-mail systems. E-mail programs should be updated to the latest versions, and the most recent security patches should be downloaded. Another vulnerability is servers that don't require passwords. Choi suggests installing routers and firewalls to guard against address spoofing and encryption programs to thwart "sniffer" programs. Other security recommendations include the following:**

- **Turn off unnecessary computer options that are often turned on for easier installation.**
- **Recognize that network administrators aren't necessarily security experts.**
- **Be wary of "free" security programs that hackers have used to attack other systems.**

**— Patrick Thibodeau**

# Introducing the new record holder in database performance on an NT Server.



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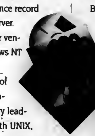

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# Briefs

## Borland is bleeding

Ailing software maker Borland International, Inc. last week said it expects to report an operating loss of between 52 cents and 61 cents per share on revenue of about $33 million to $36 million for the quarter ending Dec. 31. The anticipated loss stems from Borland's failure to ship new products in the quarter and slow sales of existing products, officials said. Borland in Scotts Valley, Calif., also will incur onetime costs associated with its November acquisition of Open Environment Corp. and for restructuring actions taken during the quarter. Due to sagging sales this year, Borland laid off 125 people, or 15% of its workforce, in October. The company will continue such restructuring in the new year, officials said.

## Microsoft buys firm

Microsoft Corp. will buy NetCarta Corp., a developer of client/server World Wide Web management and navigation products, for $20 million cash. CMG Information Services, Inc., a strategic investment and development firm in Andover, Mass., has held a majority interest in Scotts Valley, Calif.-based NetCarta. Microsoft will integrate NetCarta's WebMapper into Microsoft BackOffice. WebMapper was designed to give users an interactive, structured view of any Web site.

## Two for Tivoli

Two corporations last week announced that they will adopt TME 10 enterprise management software from Tivoli Systems, Inc. Tivoli is IBM's management software division in Austin, Texas. Marriott International, Inc., a $9 billion hospitality industry leader in Washington, is seeking to reduce the costs and overhead from distributing frequent software updates to more than 1,000 hotels. And Barnett Banks, Inc. in Jacksonville, Fla., wants to link its client/server systems management with its mainframe-based management for central, automated control.

# Rivals manage merger

### ▸ *Boole & Babbage to acquire Maxm*

*By Patrick Dryden*

BOOLE & BABBAGE, INC. last week announced plans to acquire competitor Maxm Systems Corp. to strengthen its argument that do-it-all suites aren't the only choice for controlling distributed networks and systems.

By issuing stock worth nearly $25 million, Boole & Babbage in January will take over its smaller rival in McLean, Va.

With combined sales of $220 million, Boole & Babbage will lead the $300 million enterprise event management market, which is expected to triple by 2000, according to International Data Corp. (IDC) in Framingham, Mass.

"This sounds good to have a larger firm backing Maxm," said user James Brown, senior vice president of network platforms at NationsBank in Charlotte, N.C.

This portion of the overall enterprise management market involves tools that keep operators from being overwhelmed by thousands of messages from diverse devices. The tools track events, filter out redundant messages, correlate and prioritize alerts for operators, then automate many actions.

Boole & Babbage secured a dominant position in this enterprise event automation market "for a surprisingly low price," said Paul Mason, an analyst at IDC.

Objective Systems Integrators in Folsom, Calif., is now Boole & Babbage's most significant competitor, he said.

Vendors whose enterprise management platforms offer event correlation and automated response capability include Bull Information Systems, Inc., Computer Associates International, Inc., Hewlett-Packard Co., Seagate Enterprise Management Software, Inc. and Tivoli Systems, Inc.

"Users tell us they prefer a handful of best-of-breed vendors."

Paul Newton CEO
Boole & Babbage

But those making the most noise — CA and Tivoli — have yet to prove they can handle the diverse input that IS managers need, Mason said.

"Maxm and Boole were really the two leaders who could deliver availability management across any platform, from mainframes to micros and all the networks in between," said John Lewis, vice president of technology delivery at First National Bank of Maryland in Baltimore.

"Others like CA and Tivoli are still only talking about this capability," Lewis said. His bank uses Max/Enterprise to sort out alerts from an SNA network, modems, multiplexers, automated teller machines and various computer systems.

Boole & Babbage said it will support Max/Enterprise customers and predicted a merger with its Command Post.

The sale will give Boole & Babbage so many high-profile customers that Max/Enterprise won't go away soon, said Joe Soldevila, automation project manager at Pacific Gas & Electric Co. in San Francisco. But Soldevila said he is concerned about how many Maxm Systems developers will stay on board and when he will see promised new support.

**1997 PLANS FOR BOOLE & BABBAGE AND MAXM**

**JANUARY**
- Complete acquisition
- Announce company integration plan
- Merge sales forces

**FEBRUARY**
- Meet MAXM Systems customers on 16-city tour

**MARCH**
- Outline product convergence plan

**APRIL**
- Present product road map at combined user group meeting

**MAY**

# Motorola pulls the plug on wireless devices

*By Mindy Blodgett*

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Gillott also said the devices, which cost close to $1,000, "were way too expensive."

Steven Bouvet, editor of the "Mobile Data Report," an industry newsletter in Alexandria, Va., said the devices were "too large and unwieldy. People want something they can put in their vest pocket."

McCarthy said Motorola doesn't plan to produce a new line of handheld computers, but William Frezza, an analyst at Wireless Computing Associates, Inc. in Yardley, Pa., said it is too early to count out Motorola.

"Hardware is what they do," Frezza said. "They'll probably release something soon."

# Briefs

## Borland is bleeding

Ailing software maker Borland International, Inc. last week said it expects to report an operating loss of between 50 cents and 60 cents per share on revenue of about $33 million to $36 million for the quarter ending Dec. 31. The anticipated loss stems from Borland's failure to ship new products in the quarter and slow sales of existing products, officials said. Borland in Scotts Valley, Calif., also will incur one-time costs associated with its November acquisition of Open Environment Corp. and for restructuring actions taken during the quarter. Due to sagging sales this year, Borland laid off 125 people, or 15%, of its workforce, in October. The company will continue such restructuring in the new year, officials said.

## Microsoft buys firm

Microsoft Corp. will buy NetCarta Corp., a developer of client/server World Wide Web management and navigation products, for $20 million cash. CMG Information Services, Inc., a strategic investment and development firm in Andover, Mass., has held a majority interest in Scotts Valley, Calif.-based NetCarta. Microsoft will integrate NetCarta's WebMapper into Microsoft BackOffice. WebMapper was designed to give users an interactive, structured view of any Web site.

## Two for Tivoli

Two corporations last week announced that they will adopt TME 10 enterprise management software from Tivoli Systems, Inc. Tivoli is IBM's management software division in Austin, Texas. Marriott International, Inc., a $9 billion hospitality industry leader in Washington, is seeking to reduce the costs and overhead from distributing frequent software updates to more than 1,000 hotels. And Barnett Banks, Inc. in Jacksonville, Fla., wants to link its client/server systems management with its mainframe-based management for central, automated control.

# Rivals manage merger

▸ *Boole & Babbage to acquire Maxm*

*By Patrick Dryden*

BOOLE & BABBAGE, INC. last week announced plans to acquire competitor Maxm Systems Corp. to strengthen its argument that do-it-all suites aren't the only choice for controlling distributed networks and systems.

By issuing stock worth nearly $25 million, Boole & Babbage in January will take over its smaller rival in McLean, Va.

With combined sales of $220 million, Boole & Babbage will lead the $300 million enterprise event management market, which is expected to triple by 2000, according to International Data Corp. (IDC) in Framingham, Mass.

"This sounds good to have a larger firm backing Maxm," said user James Brown, senior vice president of network platforms at NationsBank in Charlotte, N.C.

This portion of the overall enterprise management market involves tools that keep operators from being overwhelmed by thousands of messages from diverse devices. The tools track events, filter out redundant messages, correlate and prioritize alerts for operators, then automate many actions.

Boole & Babbage secured a dominant position in this enterprise event automation market "for a surprisingly low price," said Paul Mason, an analyst at IDC.

Objective Systems Integrators in Folsom, Calif., is now Boole & Babbage's most significant competitor, he said.

Vendors whose enterprise management platforms offer event correlation and automated response capability include Bull Information Systems, Inc., Computer Associates International, Inc., Hewlett-Packard Co., Seagate Enterprise Management Software, Inc. and Tivoli Systems, Inc.

But those making the most noise — CA and Tivoli — have yet to prove they can handle the diverse input that IS managers need, Mason said.

"Maxm and Boole were really the two leaders who could deliver availability management across any platform, from mainframes to micros and all the networks in between," said John Lewis, vice president of technology delivery at First National Bank of Maryland in Baltimore.

"Users tell us they prefer a handful of best-of-breed vendors."

Paul Newton, CEO
Boole & Babbage

"Others like CA and Tivoli are still only talking about this capability," Lewis said. His bank uses Max/Enterprise to sort out alerts from an SNA network, modems, multiplexers, automated teller machines and various computer systems.

Boole & Babbage said it will support Max/Enterprise customers and predicted a merger with its Command Post.

The sale will give Boole & Babbage so many high-profile customers that Max/Enterprise won't go away soon, said Joe Soldevila, automation project manager at Pacific Gas & Electric Co. in San Francisco. But Soldevila said he is concerned about how many Maxm Systems developers will stay on board and when he will see promised new support.

**1997 PLANS FOR BOOLE & BABBAGE AND MAXM**

**JANUARY**
- Complete acquisition
- Announce company integration plan
- Merge sales forces

**FEBRUARY**
- Meet MAXM Systems customers on 16-city tour

**MARCH**

**APRIL**
- Outline product convergence plan

**MAY**
- Present product road map at combined user group meeting

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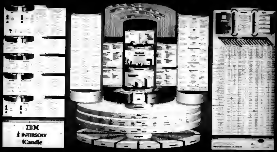
# COMPUTERWORLD

The Newsweekly for IT Leaders

COMPUTERWORLD Client/Server "Middleware" Road Map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Special Fold-out Poster

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Candle

## A Message from
## Computerworld and Database Decisions

### Welcome to the 1996 Client/Server Middleware™ Road Map

Computerworld and Database Decisions are proud to bring you this resource as you implement and manage your organization's client/server infrastructure.

This road map is an infographic guide to understanding the framework and product components necessary for successful development and deployment of enterprise-wide distributed computing.

Published by Computerworld, with content provided by Database Decisions, the 1996 Client/Server Middleware™ Road Map is the second in a series of three road maps that explain the multi-tiered structure and the products involved in client/server application development. The Client/Server Aboveware™ Road Map was published in August 1996 and a third map, The Internet/Intranet Webware™ Road Map, will be published in 1997.

As the newsweekly for information technology leaders, Computerworld is committed to serving your complete informational needs on IT. This road map, along with the editorial found each week in our newspaper, serves to assist you in making critical resource choices on distributed computing.

Through consulting and lecturing, Database Decisions helps businesses adapt to new technologies by establishing realistic goals and visions that can be shared by both IT professionals and end users.

We hope that you find this road map a valuable asset for decisions on client/server application development and we look forward to bringing you further special focus information.

Sincerely,

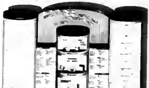
Jeffrey B Tash

**Michael R. Rogers**
*Publisher*
Computerworld

**Jeffrey B. Tash**
*President*
Database Decisions

# Client/Server "Middleware™" Road Map

*developed by*
Jeff Tash, Database Decisions



Middleware is the magical software glue that connects clients to servers.
It's literally the slash (/) in the term client/server.

At 30,000 feet, client/server is trivial – clients issue requests for services and servers respond to requests. The devil is in the implementation details.

An organization's client/server infrastructure is made up of dozens of different types of hardware and software products. The problem is trying to figure out which ones to use for which tasks. That's where the Client/Server Middleware Road Map helps out.

The Client/Server Middleware Road Map is a visual *infographic* wall poster that helps demystify the complexity surrounding client/server computing by providing a framework that describes the numerous different categories of client/server tools. This framework helps I/T professionals think about and talk about various product offerings, thereby reducing the risk of erroneous product comparisons between "apples" and "oranges."

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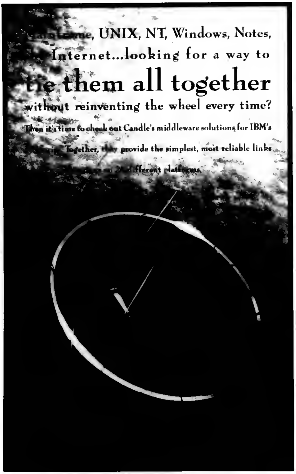
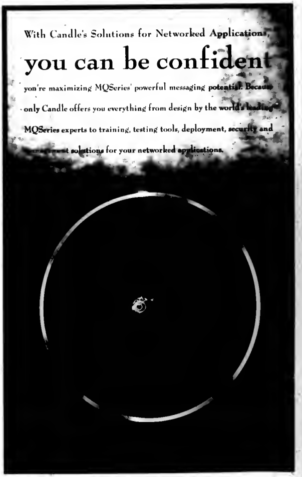

[illegible], UNIX, NT, Windows, Notes,
[illegible] Internet...looking for a way to
tie them all together
without reinventing the wheel every time?

Then it's time to check out Candle's middleware solutions for IBM's [illegible]. Together, they provide the simplest, most reliable links [illegible] different platforms.



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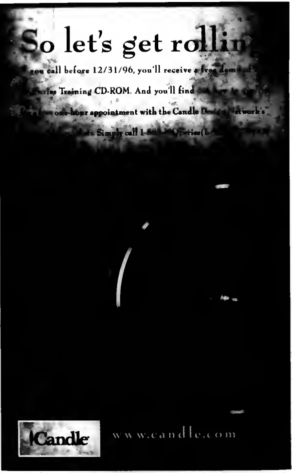
**you can be confident**

you're maximizing MQSeries' powerful messaging potential. Because only Candle offers you everything from design by the world's leading MQSeries experts to training, testing tools, deployment, security and management solutions for your networked applications.



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## Middleware

Middleware makes the network completely transparent to the application developer. With middleware, programmers can write software using a single, universal set of application programming interfaces (APIs) that can be executed anywhere, despite a heterogeneous computing environment and/or multiple, disparate data sources. Without middleware, developers must write expensive, unique code to handle all possible combinations of back-end processing environments.

Middleware products fit into three categories of services:

1. **Distributed Services**
2. **Message Routing**
3. **Application Partitioning**

Distributed Services provide facilities for an integrated set of Directory and Security services.

Message Routing supports the time-delayed, store-and-forward transmission of data files, especially e-mail documents.

Application Partitioning deals with controlling the portion of executable transaction logic that resides on the client, and the portion that runs on the server. Transaction management can be provided by either a DBMS (i.e., *TP Lite*) or a TP Monitor (i.e., *TP Heavy*). Applications can be partitioned based on: the "fat" client model (data-oriented), RPCs (function-oriented), MOMs (event-oriented), ORBs (object-oriented), or the "thin" client model (screen-oriented).

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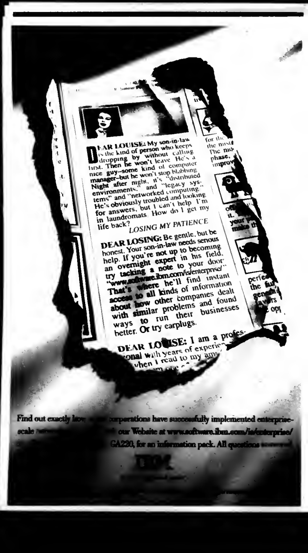

**DEAR LOUISE:** My son-in-law is the kind of person who keeps dropping by without calling first. Then he won't leave. He's a nice guy–some kind of computer manager–but he won't stop blabbing. Night after night, it's "distributed environments," and "legacy systems" and "networked computing." He's obviously troubled and looking for answers, but I can't help. I'm in laundromats. How do I get my life back?

*LOSING MY PATIENCE*

**DEAR LOSING:** Be gentle, but be honest. Your son-in-law needs serious help. If you're not up to becoming an overnight expert in his field, try tacking a note to your door: "www.software.ibm.com/is/enterprise/" That's where he'll find instant access to all kinds of information about how other companies dealt with similar problems and found ways to run their businesses better. Or try earplugs.

**DEAR LOUISE:** I am a professional with years of experie[illegible] when I read to my am[illegible]

Find out exactly how [illegible] corporations have successfully implemented enterprise-scale [illegible] our Website at www.software.ibm.com/is/enterprise/ [illegible] GA220, for an information pack. All questions [illegible]

IBM

## "Ware" do you want to be today?

The Client/Server Middleware Road Map is part of a series of *infographic* wall posters developed by Jeff Tash of Database Decisions and published by Computerworld. This road map covers:

**Clientware**
client apps – e.g., word processors, spreadsheets, graphics, web browsers, etc.

**Serverware**
server apps – e.g., RDBMSs, TP monitors, e-Mail servers, web servers, etc.

**Middleware**
tools that facilitate seamless any-to-any interoperability – masking differences or incompatibilities in network transport protocols, hardware architectures, operating systems, programming languages, database management systems, remote procedure calls, object request brokers, etc. (see Middleware panel)

**Manageware**
intelligent agents, managers, and consoles for managing enterprises, networks, systems, databases and applications (see Manageware panel)

Other members of the Client/Server Road Map Series include:

**Aboveware**
software development tools responsible for building the added-value applications that run on top of middleware (see Client/Server Aboveware Road Map)

**Webware**
software products that enable the Internet/Intranet to be used as an organization's client/server infrastructure (will be published in 1997)

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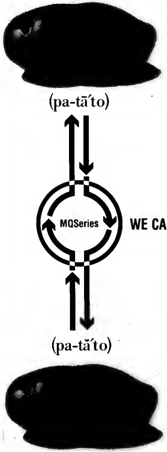

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way to link programs acr
from UNIX® and NT™ al
fact, it even supports Ja

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mega-merger, or conne
client/server systems, the
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n get along famously –
s of connectivity code.
n easier, more affordable
ss 20 different platforms –
l the way up to MVS.® In
a.™
ne song and dance.
ng applications after a
ting legacy systems with
e will be no communi-

And since all linkages are asynchronous, programs won't sit around waiting for each other or backing up in your network.

You won't have to worry about information getting lost or garbled either, or should that be (i-thər)? Even if your system goes down, MQSeries will safeguard messages until they can be delivered.

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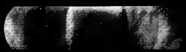
Ouch! Can you grab me a self-adhesive plastic strip?



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## Manageware

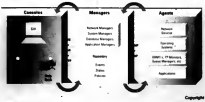
Manageware is a fully distributed client/server application for collecting management data, configuring devices, and capturing events. System administrators sit at a console and execute management applications that monitor and control:

- **network devices** (e.g., topologies, modems, routers, hubs, bridges, gateways, etc.)
- **operating systems** (e.g., workstations, file servers, communication servers, printers, etc.)
- ***"layered"* systems software** (e.g., DBMSs, TP monitors, E-mail post offices, message transfer agents, message queuing managers, etc.)
- **applications** (e.g., financial systems, manufacturing systems, human resource management systems, etc.)

All of the above require various management services such as performance monitoring, troubleshooting, remote configuration, and security auditing. Traditionally, management functions were provided by single-purpose management applications. More popular today are suites of tools that plug-and-play together in management frameworks that feature:

- a **consistent graphical user interface** across multiple management applications
- a **common information repository** for storing shared management data

**Virtually every management platform uses SNMP (Simple Network Management Protocol) or CMIP (Common Management Information Protocol) to communicate between distributed agents and the shared management data repository.**


Consoles
GUI
Managers
Network Managers
System Managers
Database Managers
Application Managers
Repository
Events
Status
Policies
Agents
Network Devices
Operating Systems
DBMS's, TP Monitors, Queue Managers, etc
Applications

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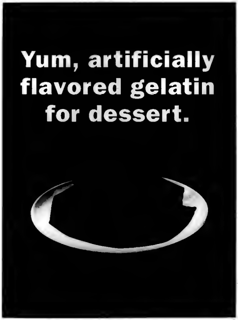

Without a recognized standard, some things just aren't the same. In Middleware®, the standard is INTERSOLV DataDirect. You might even be interested to learn that INTERSOLV owns the term Middleware itself Maybe that's why more than 160 industry partners, including most of the major names in software, are connected by DataDirect. To learn more, call 1-800-876-3101.

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Hey, throw me the flying disk.

When one brand name becomes the standard, anything else just doesn't sound right. In Middleware®, the standard is INTERSOLV DataDirect. In fact, we own the term Middleware itself. Which might explain why we were the first with server-based Middleware, cross-platform ODBC, and the first with a JDBC to ODBC bridge. To learn more, call 1-800-876-3101.

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# COMPUTERWORLD
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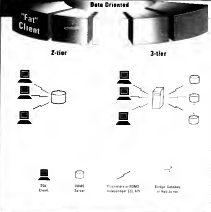

Data Oriented
"Fat" Client
2-tier
3-tier
SQL Client
DBMS Server
Proprietary or RDBMS Independent SQL API
Bridge, Gateway or Hub/Joiner

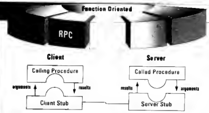
## "Fat" Clie

### Data Access

- ☐ Intersolv DataDirect SequeLink, SmartData, ODBC/JDBC
- ☐ IBM DataJoiner, DDCS, DRDA
- ☐ Microsoft ODBC, OLE DB
- ☐ Sybase Enterprise CONNECT
- ☐ Informix Enterprise Gateway, Informix-DCE/Net
- ☐ Oracle Open Gateways
- ☐ IBI EDA/SQL, EDA Hub Server
- ☐ Software AG ENTIRE Access
- ☐ CA-OpenIngres/Enterprise Access
- ☐ Visigenic VisiODBC, VisiChannel
- ☐ Apertus Enterprise/Access
- ☐ Thomson ODB/Server
- ☐ XDB-Link
- ☐ NobleNet OneDriver ODBC
- ☐ Dharma/SQL, ODBC
- ☐ Open Horizons Connection/DCE
- ☐ StarQuest StarSQL
- ☐ OpenLink ODBC/JDBC
- ☐ Simba ODBC
- ☐ Ensodex HotSockets
- ☐ CrossAccess

### Data Replication / Data Pump

- ☐ IBM Visual Warehouse, Data Propagator Relational
- ☐ Microsoft Active DW, *Sphinx*
- ☐ Sybase Replication Server
- ☐ Oracle Replication Services
- ☐ Informix CDR, HDR
- ☐ CA-OpenIngres/Replicator
- ☐ IBI EDA Copy Manager
- ☐ Platinum InfoPump
- ☐ Software AG SourcePoint, ENTIRE Transaction Propagator
- ☐ Centura Ranger
- ☐ Informatica PowerMart
- ☐ Praxis OmniReplicator


Function Oriented
RPC
Client
Server
Calling Procedure
arguments
results
Client Stub
Called Procedure
results
arguments
Server Stub

## Remote Procedu

- ☐ OSF DCE RPC
- ☐ IBM DCE
- ☐ Microsoft RPC
- ☐ HP DCE, DODCE
- ☐ DEC DCE
- ☐ SunSoft ONC+ TI-RPC
- ☐ Gradient DCE
- ☐ Tandem NonStop DCE
- ☐ Borland/DEC Entera
- ☐ NobleNet EZ-RPC

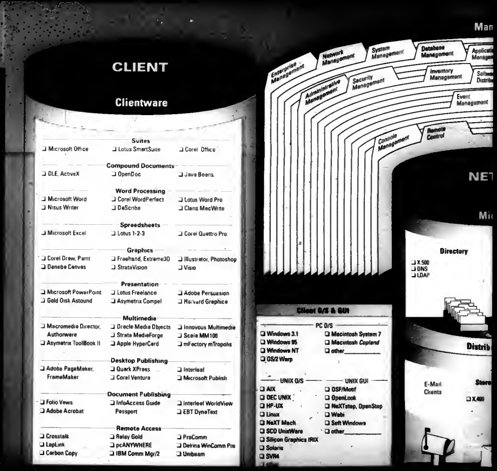
Event Oriented
MOM
Synchronous
Asynchronous

## Message Oriented

### Peer-to-Peer

- ☐ IBM MQSeries
- ☐ Transarc Encina RQS
- ☐ PeerLogic PIPES
- ☐ DECmessageQ
- ☐ BEA Tuxedo System/Q
- ☐ SAG ENTIRE BROKER
- ☐ NetWeave
- ☐ Talarian SmartSockets

# Client/Server "Mid


Man
Enterprise Management
Network Management
System Management
Database Management
Applicati
Manage
Administrative Management
Security Management
Inventory Management
Softw
Distrib
Event Management
Console Management
Remote Control
NE
Mi

## CLIENT

### Clientware

**Suites**

☐ Microsoft Office
☐ Lotus SmartSuite
☐ Corel Office

**Compound Documents**

☐ OLE, ActiveX
☐ OpenDoc
☐ Java Beans

**Word Processing**

☐ Microsoft Word
☐ Nisus Writer
☐ Corel WordPerfect
☐ DeScribe
☐ Lotus Word Pro
☐ Claris MacWrite

**Spreadsheets**

☐ Microsoft Excel
☐ Lotus 1-2-3
☐ Corel Quattro Pro

**Graphics**

☐ Corel Draw, Paint
☐ Deneba Canvas
☐ Freehand, Extreme3D
☐ StrataVision
☐ Illustrator, Photoshop
☐ Visio

**Presentation**

☐ Microsoft PowerPoint
☐ Gold Disk Astound
☐ Lotus Freelance
☐ Asymetrix Compel
☐ Adobe Persuasion
☐ Harvard Graphics

**Multimedia**

☐ Macromedia Director, Authorware
☐ Asymetrix ToolBook II
☐ Oracle Media Objects
☐ Strata MediaForge
☐ Apple HyperCard
☐ Innovous Multimedia
☐ Scala MM100
☐ mFactory mTropolis

**Desktop Publishing**

☐ Adobe PageMaker, FrameMaker
☐ Quark XPress
☐ Corel Ventura
☐ Interleaf
☐ Microsoft Publish

**Document Publishing**

☐ Folio Views
☐ Adobe Acrobat
☐ InfoAccess Guide Passport
☐ Interleaf WorldView
☐ EBT DynaText

**Remote Access**

☐ Crosstalk
☐ LapLink
☐ Carbon Copy
☐ Relay Gold
☐ pcANYWHERE
☐ IBM Comm Mgr/2
☐ ProComm
☐ Delrina WinComm Pro
☐ Unibeam

### Client O/S & GUI

**PC O/S**

☐ Windows 3.1
☐ Windows 95
☐ Windows NT
☐ OS/2 Warp
☐ Macintosh System 7
☐ Macintosh *Copland*
☐ other____________

**UNIX O/S**

☐ AIX
☐ DEC UNIX
☐ HP-UX
☐ Linux
☐ NeXT Mach
☐ SCO UnixWare
☐ Silicon Graphics IRIX
☐ Solaris
☐ SVR4
☐ other

**UNIX GUI**

☐ OSF/Motif
☐ OpenLook
☐ NeXTstep, OpenStep
☐ Wabi
☐ Soft Windows
☐ other____________

**Directory**

☐ X.500
☐ DNS
☐ LDAP

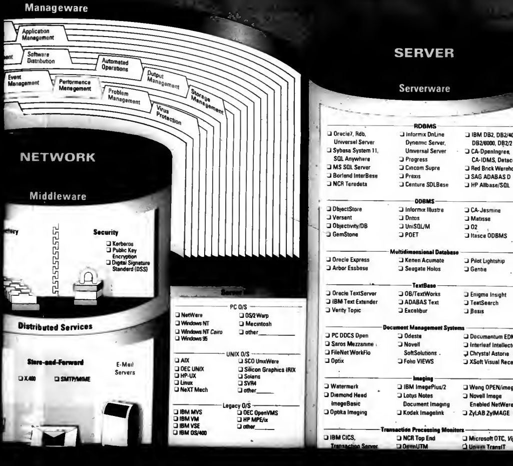
**Distrib**

E-Mail Clients

**Store**

☐ X.400

# iddleware™” Road Ma


Manageware
Application Management
ent
Software Distribution
Automated Operations
Output Management
Event Management
Performance Management
Problem Management
Storage Management
Virus Protection
NETWORK
Middleware
ctory
Distributed Services
E-Mail Servers
SERVER
Serverware
Server

**Security**

- ☐ Kerberos
- ☐ Public Key Encryption
- ☐ Digital Signature Standard (DSS)

**Store-and-Forward**

- ☐ X.400
- ☐ SMTP/MIME

**PC O/S**

- ☐ NetWare
- ☐ Windows NT
- ☐ Windows NT *Cairo*
- ☐ Windows 95
- ☐ OS/2 Warp
- ☐ Macintosh
- ☐ other__________

**UNIX O/S**

- ☐ AIX
- ☐ DEC UNIX
- ☐ HP-UX
- ☐ Linux
- ☐ NeXT Mach
- ☐ SCO UnixWare
- ☐ Silicon Graphics IRIX
- ☐ Solaris
- ☐ SVR4
- ☐ other______

**Legacy O/S**

- ☐ IBM MVS
- ☐ IBM VM
- ☐ IBM VSE
- ☐ IBM OS/400
- ☐ DEC OpenVMS
- ☐ HP MPE/ix
- ☐ other______

**RDBMS**

- ☐ Oracle7, Rdb, Universal Server
- ☐ Sybase System 11, SQL Anywhere
- ☐ MS SQL Server
- ☐ Borland InterBase
- ☐ NCR Teradata
- ☐ Informix OnLine Dynamic Server, Universal Server
- ☐ Progress
- ☐ Cincom Supra
- ☐ Praxis
- ☐ Centura SQLBase
- ☐ IBM DB2, DB2/40
  DB2/6000, DB2/2
- ☐ CA-OpenIngres,
  CA-IDMS, Datac
- ☐ Red Brick Wareho
- ☐ SAG ADABAS D
- ☐ HP Allbase/SQL

**ODBMS**

- ☐ ObjectStore
- ☐ Versant
- ☐ Objectivity/DB
- ☐ GemStone
- ☐ Informix Illustra
- ☐ Ontos
- ☐ UniSQL/M
- ☐ POET
- ☐ CA-Jasmine
- ☐ Matisse
- ☐ O2
- ☐ Itasca ODBMS

**Multidimensional Database**

- ☐ Oracle Express
- ☐ Arbor Essbase
- ☐ Kenan Acumate
- ☐ Seagate Holos
- ☐ Pilot Lightship
- ☐ Gentia

**TextBase**

- ☐ Oracle TextServer
- ☐ IBM Text Extender
- ☐ Verity Topic
- ☐ DB/TextWorks
- ☐ ADABAS Text
- ☐ Excalibur
- ☐ Enigma Insight
- ☐ TextSearch
- ☐ Basis

**Document Management Systems**

- ☐ PC DOCS Open
- ☐ Saros Mezzanine
- ☐ FileNet WorkFlo
- ☐ Optix
- ☐ Odesta
- ☐ Novell SoftSolutions
- ☐ Folio VIEWS
- ☐ Documentum EDI
- ☐ Interleaf Intellect
- ☐ Chrystal Astoria
- ☐ XSoft Visual Rece

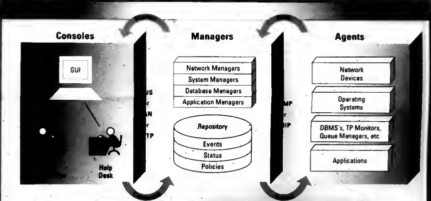
**Imaging**

- ☐ Watermark
- ☐ Diamond Head ImageBasic
- ☐ Optika Imaging
- ☐ IBM ImagePlus/2
- ☐ Lotus Notes Document Imaging
- ☐ Kodak Imagelink
- ☐ Wang OPEN/imag
- ☐ Novell Image
  Enabled NetWare
- ☐ ZyLAB ZyIMAGE

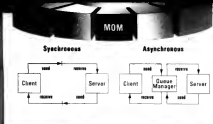
**Transaction Processing Monitors**

- ☐ IBM CICS, Transaction Server
- ☐ NCR Top End
- ☐ OpenUTM
- ☐ Microsoft DTC, *Vi*
- ☐ Unisys TransIT

Database Decisions


Consoles
GUI
Help
Desk
US
r
AN
r
TP
Managers
Network Managers
System Managers
Database Managers
Application Managers
Repository
Events
Status
Policies
MP
r
IP
Agents
Network
Devices
Operating
Systems
DBMS's, TP Monitors,
Queue Managers, etc.
Applications

| | Enterprise Management | Network Management | System Management | Database Management | Application Management | Administrative Management | Security Management | Inventory Management | Software Distribution | Automated Operations | Output Management | Storage Management | Event Management | Performance Management | Problem Management | Virus Protection | Console Management | Remote Management |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tivoli TME10 (Tivoli Management Environment), GEM | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | ● | | ● | ● | ● |
| Tivoli/Plus | | | ● | | | | ● | | | ● | ● | ● | | | ● | | | |
| HP OpenView | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | | ● | |
| CA-Unicenter | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | |
| CA-Unicenter TNG | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | |
| Solstice Enterprise Manager | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● |
| Cabletron Spectrum | ● | ● | ● | | ● | ● | | ● | | ● | | | ● | | ● | | ● | |
| Microsoft SMS (System Management Server) | | ● | ● | | | | | ● | ● | | | | | | | | | ● |
| Novell ManageWise | | ● | ● | | | ● | ● | ● | ● | | | | ● | ● | | ● | ● | ● |
| Seagate EMS (Enterprise-Management Software) | | ● | ● | | | | | ● | ● | ● | | ● | ● | | | ● | ● | ● |
| CompuWare EcoTOOLS | | ● | | ● | | ● | ● | ● | | ● | | | ● | ● | | | ● | |


MOM
Sychronous
Asynchronous
send
receive
Client
Server
send
receive
Client
Queue Manager
Server
receive
send

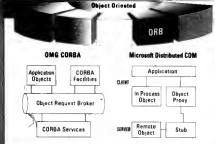
## Message Ori

Peer-to-Peer

- ☐ IBM MQSeries
- ☐ Transarc Encina RDS
- ☐ PeerLogic PIPES
- ☐ DECmessageQ
- ☐ NCR Top End RTQ
- ☐ Covia Comm Integrator
- ☐ Momentum XIPC
- ☐ BEA Tuxedo System/Q
- ☐ SAG ENTIRE-BROKER
- ☐ NetWeave
- ☐ Talarian SmartSockets
- ☐ Oracle Mobile Agents
- ☐ Sybase EMS
- ☐ Informix-Mobile

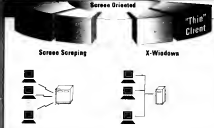
Publish / Subscribe

- ☐ TIBCO Rendevous
- ☐ BEA Tuxedo Event Broker
- ☐ ISIS Message Distribution Services


Object Oriented
ORB
OMG CORBA
Microsoft Distributed COM
Application Objects
CORBA Facilities
Object Request Broker
CORBA Services
Application
CLIENT
In Process Object
Object Proxy
SERVER
Remote Object
Stub

## Object Request

- ☐ OMG CORBA
- ☐ Microsoft OLE/COM, DCOM
- ☐ IBM SOMobjects, DSOM
- ☐ HP ORB Plus
- ☐ DEC ObjectBroker
- ☐ SunSoft NEO, Joe
- ☐ Iona Orbix
- ☐ NeXT PDO
- ☐ Expersoft PowerBroker
- ☐ PostModern ORBeline
- ☐ TIBCO ObjectBus
- ☐ Visual Edge Object Bridge
- ☐ Borland/DEC OLEnterprise
- ☐ Software AG DCOM FTE


Screen Oriented
"Thin" Client
Screen Scraping
X-Windows

## "Thin" Cli

Screen Scraper

- ☐ Attachmate QuickApp
- ☐ Wall Data RUMBA Express
- ☐ Mitem MitemView
- ☐ Mozart
- ☐ Sterling STAR Flashpoint
- ☐ VMark ESL, TERMiTE

PC X-Server

- ☐ WRQ Reflection/X
- ☐ Hummingbird eXceed
- ☐ NetManage Xoftware
- ☐ NCD PC-Xware
- ☐ SCO XVision Eclipse
- ☐ FTP X-OnNet
- ☐ White Pine eXodus
- ☐ Frontier Technologies SuperTCP
- ☐ Novell LAN WorkPlace

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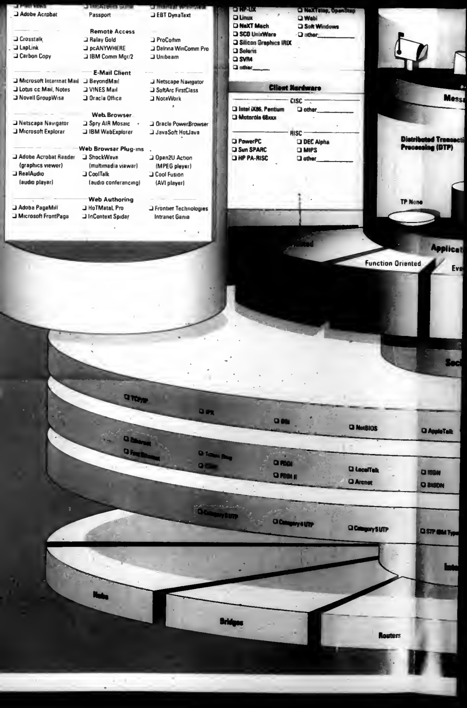
Mess
Distributed Transacti
Processing (DTP)
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Function Oriented
Applicat
Eve
Sec
☐ TCP/IP
☐ IPX
☐ OSI
☐ NetBIOS
☐ AppleTalk
☐ Ethernet
☐ Fast Ethernet
☐ Token Ring
☐ FDDI
☐ FDDI II
☐ LocalTalk
☐ Arcnet
☐ ISDN
☐ BISDN
☐ Category 3 UTP
☐ Category 4 UTP
☐ Category 5 UTP
☐ STP IBM Type
Inte
Hubs
Bridges
Routers

☐ Adobe Acrobat
Passport
☐ EBT DynaText

**Remote Access**

☐ Crosstalk
☐ LapLink
☐ Carbon Copy
☐ Relay Gold
☐ pcANYWHERE
☐ IBM Comm Mgr/2
☐ ProComm
☐ Delrina WinComm Pro
☐ Unibeam

**E-Mail Client**

☐ Microsoft Internet Mail
☐ Lotus cc Mail, Notes
☐ Novell GroupWise
☐ BeyondMail
☐ VINES Mail
☐ Oracle Office
☐ Netscape Navigator
☐ SoftArc FirstClass
☐ NoteWork

**Web Browser**

☐ Netscape Navigator
☐ Microsoft Explorer
☐ Spry AIR Mosaic
☐ IBM WebExplorer
☐ Oracle PowerBrowser
☐ JavaSoft HotJava

**Web Browser Plug-ins**

☐ Adobe Acrobat Reader (graphics viewer)
☐ RealAudio (audio player)
☐ ShockWave (multimedia viewer)
☐ CoolTalk (audio conferencing)
☐ Open2U Action (MPEG player)
☐ Cool Fusion (AVI player)

**Web Authoring**

☐ Adobe PageMill
☐ Microsoft FrontPage
☐ HoTMetaL Pro
☐ InContext Spider
☐ Frontier Technologies Intranet Genie

☐ HP-UX
☐ Linux
☐ NeXT Mach
☐ SCO UnixWare
☐ Silicon Graphics IRIX
☐ Solaris
☐ SVR4
☐ other_____
☐ NeXTstep, OpenStep
☐ Wabi
☐ Soft Windows
☐ other__________

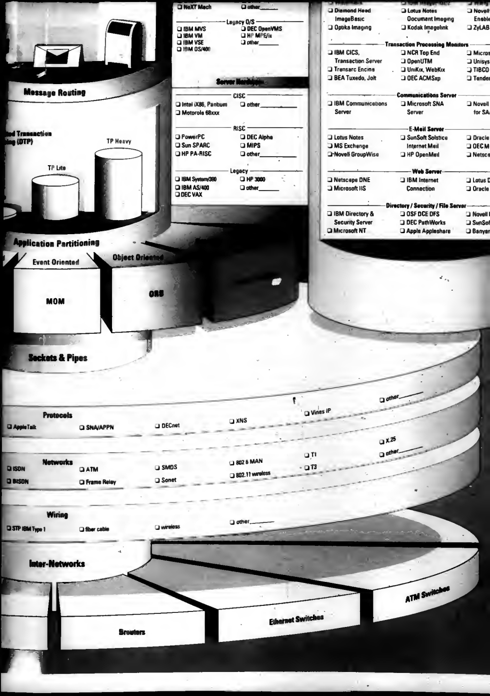
**Client Hardware**

CISC

☐ Intel iX86, Pentium
☐ Motorola 68xxx
☐ other__________

RISC

☐ PowerPC
☐ Sun SPARC
☐ HP PA-RISC
☐ DEC Alpha
☐ MIPS
☐ other__________


Message Routing
ed Transaction
ing (DTP)
TP Heavy
TP Lite
Application Partitioning
Event Oriented
Object Oriented
MOM
ORB
Sockets & Pipes
Inter-Networks
Routers
Ethernet Switches
ATM Switches

☐ NeXT Mach
☐ other______

Legacy O/S

☐ IBM MVS
☐ IBM VM
☐ IBM VSE
☐ IBM OS/400
☐ DEC OpenVMS
☐ HP MPE/ix
☐ other______

**Server Hardware**

CISC

☐ Intel iX86, Pentium
☐ Motorola 68xxx
☐ other______

RISC

☐ PowerPC
☐ Sun SPARC
☐ HP PA-RISC
☐ DEC Alpha
☐ MIPS
☐ other______

Legacy

☐ IBM System/390
☐ IBM AS/400
☐ DEC VAX
☐ HP 3000
☐ other______

☐ Diamond Head ImageBasic
☐ Optika Imaging
☐ Lotus Notes Document Imaging
☐ Kodak Imagelink
☐ Novell Enable
☐ ZyLAB

**Transaction Processing Monitors**

☐ IBM CICS, Transaction Server
☐ Transarc Encina
☐ BEA Tuxedo, Jolt
☐ NCR Top End
☐ OpenUTM
☐ UniKix, WebKix
☐ DEC ACMSxp
☐ Micros
☐ Unisys
☐ TIBCO
☐ Tender

**Communications Server**

☐ IBM Communications Server
☐ Microsoft SNA Server
☐ Novell for SA

**E-Mail Server**

☐ Lotus Notes
☐ MS Exchange
☐ Novell GroupWise
☐ SunSoft Solstice Internet Mail
☐ HP OpenMail
☐ Oracle
☐ DEC M
☐ Netsca

**Web Server**

☐ Netscape DNE
☐ Microsoft IIS
☐ IBM Internet Connection
☐ Lotus D
☐ Oracle

**Directory / Security / File Server**

☐ IBM Directory & Security Server
☐ Microsoft NT
☐ OSF DCE DFS
☐ DEC PathWorks
☐ Apple Appleshare
☐ Novell
☐ SunSof
☐ Banyan

**Protocols**

☐ AppleTalk
☐ SNA/APPN
☐ DECnet
☐ XNS
☐ Vines IP
☐ other______

**Networks**

☐ ISDN
☐ BISDN
☐ ATM
☐ Frame Relay
☐ SMDS
☐ Sonet
☐ 802 6 MAN
☐ 802.11 wireless
☐ T1
☐ T3
☐ X.25
☐ other______

**Wiring**

☐ STP IBM Type 1
☐ fiber cable
☐ wireless
☐ other______

Image
d NetWare
ZylMAGE

oft DTC, *Viper*
TransIT
ETX
n TS/MP

NetWare
A

Office
ailBus
pe Mail

omino
WebServer

NDS, NetWare
t NIS+, NFS
EMS, VINES

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cabletron Spectrum | ● | ● | ● | | ● | ● | | ● | | ● | | | ● | | ● | | ● | |
| Microsoft SMS (System Management Server) | | ● | ● | | | | | ● | ● | | | | | | | | | ● |
| Novell ManageWise | | ● | ● | | | ● | ● | ● | ● | | | | ● | ● | | ● | ● | ● |
| Seagate EMS (Enterprise Management Software) | | ● | ● | | | | | ● | ● | ● | | ● | ● | | | ● | ● | ● |
| CompuWare EcoTOOLS | | ● | | ● | | ● | ● | ● | | ● | | | ● | ● | | | ● | |
| Platinum POEMS (Open Enterprise Management Software) | | | ● | ● | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| OpenVision AXXiON | | | ● | | | | ● | | ● | ● | | ● | ● | ● | | | | |
| Intel LANDesk StorageExpress | | | ● | | | | | ● | ● | | ● | ● | ● | | ● | ● | | ● |
| Digital POLYCENTER | | ● | ● | | | ● | ● | | | ● | | | ● | ● | | | ● | |
| BMC Software PATROL | | | ● | ● | ● | ● | | | | | | ● | ● | ● | | | ● | |
| Candle Command Center | | | ● | ● | ● | | | | | | | | ● | ● | | | ● | |
| Boole & Babbage Command/Post | | | ● | | | | | ● | ● | ● | | ● | ● | ● | ● | | ● | |
| IBM DataHub | | | | ● | | | | | | | | ● | | | | | | |
| Oracle Enterprise Manager | | | ● | ● | | | | ● | ● | ● | | ● | ● | ● | | | | |
| Sybase ESSM (Enterprise SQL Serve Manager) | | | | ● | | | | | | | | ● | | ● | | | | |
| Informix ECC (Enterprise Command Center) | | | | ● | | | | | | | | | | | | | | |
| Novadigm Enterprise Desktop Manager | | | ● | | | | | ● | ● | | | | | | | | | |
| Symantec NAN (Norton Administrator for Networks) | | ● | ● | | | | | ● | ● | | | | | | | | | |
| McAfee Saber LAN Workstation | | | ● | | | | | ● | ● | ● | | | | | ● | | | |
| Attachmate NetWizard | | | ● | | | | | ● | ● | | | | | | | | | |
| Tangram Enterprise Solutions AM PM | | | ● | | | | | ● | ● | | | | | | | | | |
| Open Systems Management COS | | | ● | | | ● | | | | ● | | | | ● | | | | |
| Axent OmniGuard | | | ● | | | ● | ● | | | | | ● | | | | | | |
| BGS Systems Best/1 | | | ● | | | | | | | | | | | ● | | | | |
| Vantive Help Desk | | | ● | | | | | | | | | | | | ● | | | |
| Remedy AR (Action Request) System | | | ● | | | | | | | | | | | | ● | | | |
| Clarify ClearSupport | | | ● | | | | | | | | | | | | ● | | | |
| Software Artistry SA Xpert Advisor | | | ● | | | | | | | | | | | | ● | | | |
| Scopus for the Help Desk | | | ● | | | | | | | | | | | | ● | | | |
| Peregrine PNMS | | ● | ● | | | | | ● | | | | | | | ● | | | |
| Unison Maestro, Express RoadRunner, Vista | | | ● | | | | | | | ● | ● | ● | | ● | | | | |
| New [illegible] Control-M | | | ● | | | | | | | ● | | | | | | | | |
| Dazel | | | ● | | | | | | | | ● | | | | | | | |
| CA-Cheyenne ARCserver | | | ● | | | | | | | | | ● | | | | | | |
| Legato NetWorker | | | ● | | | | | | | | | ● | | | | | | |
| QStar MastarMind | | | ● | | | | | | | | | ● | | | | | | |
| Horizon LANshadow | | | ● | | | | | | | | | ● | | | | | | |
| DallasTools | | | ● | | | | | | | | | ● | | | | | | |
| Security Dynamics | | | ● | | | | ● | | | | | | | | | | | |
| Nortel Entrust | | | ● | | | | ● | | | | | | | | | | | |
| MEMCO SeOS (Security for Open Systems) | | | ● | | | | ● | | | | | | | | | | | |
| DynaSoft BoKS | | | ● | | | | ● | | | | | | | | | | | |

***Developed by:***

**The Road Map Series was created by Jeff Tash, president of Database Decisions, a division of Hewitt Associates LLC.**

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**95 Sawyer Road**
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**Waltham, MA 02154**

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**Internet:** dbd@dac.com

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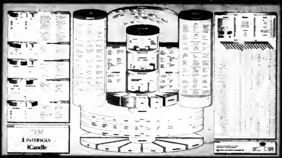
COMPUTERWORLD Client/Server "Middleware" Road Map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*Sponsored by* IBM INTERSOLV Candle

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you'll need a good map.

Now we have two!

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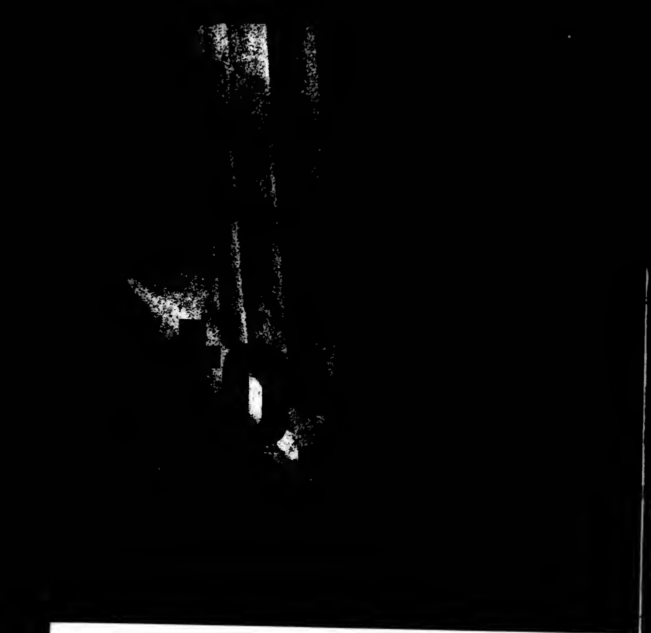

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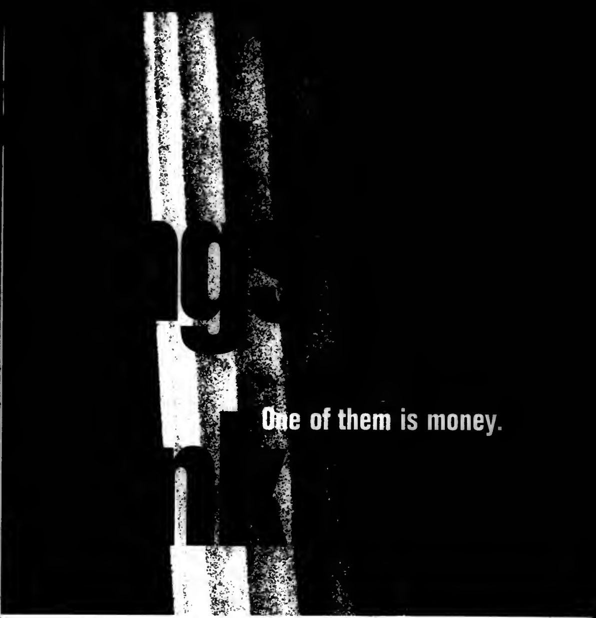

One of them is money.

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When information is everything.

## EDITORIAL

# As simple as ABC? Help! I've read too much

**management psychobabble, and I can't get up.**

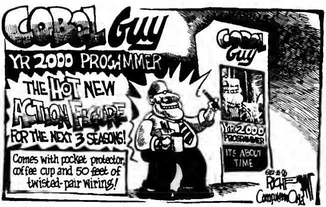
**After reviewing 10 years' worth of articles, columns, newsletters and reports on being a successful IS executive, one thing hit me: Most "experts" and writers tell you there's a sure-fire secret for success. They make it sound as simple as a preschooler's alphabet book. So I tried to come up with one, and sure enough . . .**

- ■ is for Aligns with the business
- ■ is for Builds relationships
- ■ is for Change agent
- ■ is for Demonstrates ROI
- ■ is for Educates upper management
- ■ is for Fires incompetents
- ■ is for Good with people
- ■ is for Hires smart people
- ■ is for Innovative
- ■ is for Listens well
- ■ is for Juggles many roles
- ■ is for Knows technology
- ■ is for Manages expectations
- ■ is for No technobabble
- ■ is for On time, on budget
- ■ is for Politically savvy
- ■ is for Quality systems
- ■ is for Responsive to users
- ■ is for Strategic thinker
- ■ is for Team player
- ■ is for Understands the business
- ■ is for Visionary
- ■ is for Works well with users
- ■ is for eXecutes
- ■ is for Yes! a positive attitude
- ■ is for Zaps IT costs

**If you believe wisdom can be freeze-dried, pin this list of ABCs to the wall. Or give it to a preschooler. The IS profession needs fresh talent. But if you think the real world is no nursery school, be skeptical about those best-practice-mongers. Pay more attention to the demands, successes and idiosyncrasies of the people around you: staff, management, customers, peers. Unless you work in a madhouse (and some of us do), the real management experts are the people you manage.**

Allan E. Alt

**Allan E. Alter, *Senior editor, Managing***
**Internet: *allan_alter@cw.com***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## LETTERS

Change is coming

### Second-guessing network operating system review

I DON'T WANT TO come off like some operating systems fanatic, but where did you get the reviewer for your network operating system Buyer's Guide ["Change is coming," CW, Nov 4]?

NetWare and OS/2 — No. 1 and No. 2 in market share — got less column space than Windows NT. NetWare's only weakness was "lags as an applications server." OS/2's weakness was "lacks platform support."

Excuse me, but doesn't NetWare have the same weakness? Overall, NT's weaknesses ("lacks directory services, poor systems management support") are more glaring problems.

OS/2's grades were 5s and 4s across the board, whereas NT's were a a, 3s and 4s. The where-to-deploy advice for OS/2 was enterprisewide, especially for remote sites. For NT, it was for departments and small divisions only.

But where did [writer Lynda Radosevich] get the advice about deploying OS/2 only to large IBM installations? My site runs LAN Server 4.0 servicing Windows 3.1, Windows 95 and OS/a desktops without a problem.

*Neil Zampella*
*Belleville, Ill.*
*neilz@accessus.net*

THE COMPUTERWORLD survey of network operating systems is the third article on network operating systems I have read recently in IS publications.

All three articles recommended that Microsoft Windows NT should *not* be used in mission-critical applications. Since NT is marketed as a premier database server network operating system, I would like to know what types of database applications are considered "noncritical?"

*John Lambert*
*Director of information services*
*Trans Registry*
*Miami*
*jlambert@registrynet.com*

### With NCs, what happens if the file server goes down?

I HAVE BEEN reading, with much amusement, all the hype and fury about the network computer. The idea of thin-client computers on the desks of corporate America sounds wonderful. Everyone wants to get into the act of creating the one and only network computer, which everyone else is going to buy.

Do they let everyone go home for the day?

But why would anyone in their right mind want to have a device on their desk that depends on a file server to run its applications? What happens when the file server goes down — and stays down for a day or so?

No work gets done.

I'm sure corporations that embrace network computer technology are thinking hard and long about the implications of what happens when the server decides it's going to take the next day or two off. Do they have hardware backups to hand out to their workforce? Or do they let everyone go home for the day?

The network computer is just a glorified dumb terminal that will run Java or whatever new programming language or operating system is in vogue this week. I'll stay away from using one or even recommending it.

*David S. Weir*
*PC analyst*
*Chicago*

### Hubba-hubba, that's one sexy PDA you've got there

I SNEERED AT personal digital assistants (PDA), but I lust for one of those new $500 handheld PCs ["Microsoft OS inspires handheld PC makers," CW, Nov 11].

I'm tired of spending $120 for a notebook battery that runs down in a year whether I use it or not. Handhelds' AA or rechargeable batteries promise 10 hours of service instead of two, for a few bucks instead of hundreds. And the ability to practically touch-type notes and write memos attracts me a lot more than a coat-pocket fit.

*Greg Johnson*
*Columbia, Mo.*

**More letters,** page 40

**Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.**

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- 22 Dir./Mgr. Network Sys., Data/Tele Comm., LAN Mgr./PC Mgr., Tech Planning, Administrative Services
- 23 Dir./Mgr. Sys. Development, Systems Architecture
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**3.** Do you use, evaluate, specify, recommend, purchase (Circle all that apply)

Operating Systems
- (a) Solaris
- (b) Netware
- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

**4.** Which of the following software products do you buy, specify, recommend or approve the purchase of? (Please check all that apply)
- (a) ☐ Internet software
- (b) ☐ Internet browsers
- (c) ☐ Web authoring/development tools

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Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

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- (b) ☐ Internet browsers
- (c) ☐ Web authoring/development tools

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# The next cyberrevolution will be financial

## *H. Eric Firdman*

Shortages. Poor service. Crumbling infrastructure. These phrases are usually associated with an economic failure, such as in the former Soviet Union. But soon they will describe in the same way a vital part of the world's largest free-market economy — the U.S. telecommunications system.

**New Internet pricing schemes are needed to fix the nation's crumbling network infrastructure**

The system has already suffered some ministrokes from clogged arteries. The Internet is the source of the arterial sclerosis. In one recent and dramatic example, 16% of calls attempted through a Silicon Valley switch during peak evening hours failed because of Internet traffic.

The growing population of cybernauts — which is estimated at 25 million to 30 million — requires far more capacity than the population of regular telephone users. A Pacific Bell study timed the average Internet surf at 20.8 minutes, compared with 3.8 minutes for an average phone call. And 10% of Internet calls lasted six hours or longer. As usage gains, capacity strains.

This will only worsen with the advent of capacity-hungry multimedia applications and entertainment appliances, such as Sony's WebTV. The appliances are touted as "Internet for the masses." But the system isn't ready for the masses. Its performance is already compromised.

Expanding capacity is technically possible. But who will pay for it? The Internet is too unstable economically to support such investment. There are currently about 3,600 Internet service providers; unfortunately, the business is unprofitable for many of them because of irrational pricing.

Instead of charging according to usage, the service providers use a flat monthly fee, usually $19.95. Excluding marketing and overhead costs, an Internet service provider can break even at that fee only if the average consumer's daily online use is less than 40 minutes. But given the exponential growth of time-consuming Internet applications, even the modest Internet user soon may become a moneylosing proposition. In essence, the service providers are sacrificing profit for growth.

What keeps the Internet afloat is huge investment by telecommunications giants and highly publicized stock offerings by Internet service providers. Capital markets are so excited about the Internet that they provide more cash for its operation than users do. The major providers collectively raised more capital between 1993 and 1996 than their total revenues in the same period. That bubble has to burst.

One alternative is for the Federal Communications Commission to impose metering of local calls. Other countries have done this for years, but Americans regard unmetered local calls as their birthright.

A better choice is more rational pricing by the private sector.

One model is usage-sensitive pricing, which combines a flat monthly fee with additional charges for those who spend a lot of time or use a lot of bandwidth. Another model is priority-based pricing, in which customers who want faster or more reliable service pay more.

Service providers also could offer value-added services. Customers who want real-time audio and video could pay to have the resources reserved in advance. And providers could let customers rent software for network-centric computing. That will become popular in the next two to three years and will create excellent moneymaking opportunities.

The result will be greater profitability for the Internet industry and more choices and better service for users. Then, providers will be able to establish rational economic order and prevent gridlock on the information superhighway.

*Firdman is a senior consultant at American Management Systems, Inc. in Redwood City, Calif. His Internet address is eric_firdman@mail.amsinc.com.*

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# Much to learn from our tribal elders

## *John Gantz*

As I looked out at the crowd, I thought, "Uh oh, how's this going to go?" I had volunteered to chair the last session at Comdex, a discussion on the impact of the microprocessor in the next 25 years. After all, this was the microprocessor's 25th anniversary.

There I was, standing at the podium, wondering what a bunch of middle-aged white guys — some of whom aren't going to be around and none of whom are likely to be major players in 2021 — could offer a packed house of Java programmers, young IS professionals, up-and-coming industry executives and fresh-faced reporters.

As it turns out, more than I thought. Maybe there's a reason most cultures revere their tribal elders. Bob Spinrad, vice president of technology strategy at Xerox and for many years head of Xerox Parc, pointed out that the combinatorial equations are so complex that predicting the future with any kind of specificity is impossible. But then he noted that in a few years, disk-storage advances will let us carry in our pocket the digital record of all the books we've ever read. Long before 2021, we'll be able to carry all the movies and TV shows we want, not to mention our own personal histories. This vision extends the idea of smart cards by several decimal points.

Next was a prediction from Ethernet inventor Robert Metcalfe, who said the network computer concept will prevail. He said we'll all be connected to one another and have access to all the information we can handle — and plenty we can't. Network computers will come in all shapes and sizes; maybe they'll be the players for the storage devices we can keep in our pockets. But Metcalfe expressed some doubt that low-earth orbiting satellites, such as Motorola's Iridium project and Microsoft's Teledisc project, will be the network of choice in 2021. For one thing, Metcalfe said he was worried about what would happen if all those satellites fell out of the sky.

Another tribal elder, Tony Oettinger, from Harvard's Program on Information Policy, suggested that the next great advances in computing will come from biomedicine. Rather than try to get today's computers to think like humans, we can take what we're learning about the human brain and redesign computers from scratch, he said.

Besides the natural fit between human data processing and electronic data processing, this is the field currently most rich in basic research funding.

**Even in 25 years, we'll still need technical wizards to pull the levers**

The audience also chipped in their predictions for IS professionals. The consensus was that even though the use and deployment of information technology would be democratized, with end users managing and processing their own information stores, there always would be room for technical high priests. Why? Because making systems simpler to deal with requires an order of magnitude more complexity. There's got to be a wizard who pulls the levers behind the curtain.

One of the biggest questions went unanswered — would all the software components of 2021 bear a Microsoft logo? The combinatorial equations are too complex.

But as Oettinger pointed out, when the microprocessor was invented, IBM had a greater share of the industry market than Microsoft has today. In short, the tribal leaders agreed, anything can happen.

*Gantz is a senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idcresearch.com.*

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## LETTERS

# Ruffled feathers in the training nest

**OF COURSE** classroom training ranks low with users ["Winging it," CW, Oct. 21]. Most trainers are doing it wrong.

**Problem No. 1:** Lack of a sound methodology. Training companies still haven't learned that lecture-heavy, press-these-keys training doesn't work.

**Problem No. 2:** Generic, off-the-shelf training that doesn't fit the needs of specific users. CyberSkills has separate classes for new users and students who know a similar program. This is obvious, but we can't find anyone else who does it. Similarly, if one-on-one sessions or group Q&As would be better for some users, give them that. These are skills- and needs-assessment issues, that, for reasons of cost or ignorance, buyers and sellers of training are reluctant to do.

**Problem No. 3:** Classes that are too long. Easy answer: Divide all classes into half-day rather than full-day sessions.

**Problem No. 4:** Poor training manuals. Most are designed for in-class but not for postclass use, despite claims to the contrary.

Your article stated that "the role of training needs to change." Not at all. The way training is designed, delivered and purchased has to change.

*Paul Reali*
*President*
*CyberSkills Computer Training Centers*
*Winston-Salem, N.C.*

I am writing to protest the misleading and fallacious Page 1 teaser in the Oct. 21 issue, "Are software training classes for the birds? Your users think so." The so-called survey in the article did not even include software training classes. Training seminars were alluded to frequently but never defined. Typically, training seminars are not hands-on; they are product overviews with a speaker.

The "nontraditional methods" championed by the author — particularly experimenting and asking co-workers and friends — are in fact the least productive. Experimenting presumes that the user has plenty of time and no pressing work to do. Asking co-workers presumes they have nothing better to do either.

*Jim Kimmel*
*Micro Computer Solutions*
*Louisville, Ky.*
*jrk1@teammcs.com*

Thank you for the "Winging it" article regarding favorite learning methods for PC users. Your article reflects two major findings. First, the favorite learning preference of PC users is software experimentation. Second, PC users value asking direct questions and receiving quick answers from other experienced users.

But how does the real learning environment operate? Users prefer experimenting with software but rarely have the time. And although PC users have their preferred learning styles, their managers/IS directors face the budgetary constraints of providing cost-effective training.

Did your article ruffle some feathers in the training community? My training company enjoyed your article and would like to order reprints for our ongoing marketing effort to new clients. As always, I am an avid *Computerworld* reader, whether it ruffles my feathers or not.

*Richard C. Kraneis*
*President*
*Training New Technology*
*Chicago*
*74563.1674@compuserve.com*

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# Giving our new look the once-over

**REGARDING** *Computerworld's* redesign, I want to quote an age-old adage (which most chief information officers should memorize): Quality over quantity.

I think that the changes are good and that it is better to have more — just as long as *Computerworld* maintains its reputation for quality. I don't care how the magazine looks really, just as long as it remains the *Computerworld* that I started to subscribe to, in quality. Keep up the good work.

*Robin Radez*
*Westport, Conn.*

**I AM READING** the Nov. 18 issue of your magazine. While I find it extremely useful in terms of news and commentary, you made a few changes this time.

Most notable is the graphics. Most of the changes are useful. I liked [your old style in which] different sections had "bookmarks" on the edge of the paper. But I usually read straight through the magazine and don't use the tab markings. What I don't like are the different fonts for the headlines. I find that distracting.

*Jay LaCorte*
*Wilmington, Del.*

# Victims or pirates?

**CONCERNING** Paul Gillin's Up Front column ["The RBOC whine," CW, Nov. 11], who's whining here?

Gillin sounds like a shareholder of an Internet service provider. It all comes down to billing the customers for the cost of the service. It is only fair that those who use the system more should pay more.

Your World Wide Web surfing uses the system more (Gillin says five times more; I have heard up to nine times more) than my voice use does. Why should I subsidize your use of the system?

Because consumer voice lines can serve either user, the place to collect the extra charges, proportional to the use of the system, is at the other end of the data connection, the Internet service provider. What Gillin advocates is to spread the cost of the current low percentage of people who use the Internet over the entire population.

Having the Internet grow without subsidies will best aid the long-term health of the industry, although it may not pad the pockets of the Internet service providers as much now.

*Ron Benson*
*St. Paul, Minn.*

**REGARDING** Paul Gillin's piece on "The RBOC whine," it seems the telephone companies mistakenly believe long hours on the World Wide Web is what we want. Not true!

Professionals would gladly pay for Integrated Services Digital Network (ISDN) or an Asymmetric Digital Subscriber Line and reduce time spent on the Web. That would add revenue to the phone companies' coffers for service rendered and free up the switched network for users who can't afford the luxury of ISDN.

The snag is that the telephone companies refused to invest in data communications deployment and still don't have a clue. Instead of giving me the service I want and would pay more for, they are going to charge me more for using the lousy service they have deployed for two decades.

My solution? I bought a Hughes Electronics Corp. DirecPC satellite downlink. It cost $695, and I'll pay a hefty monthly fee on top of the Internet access provider fees I already pay. But I'll be spending more time with my family.

*Tim Sloane*
*Director, Internet research*
*Aberdeen Group, Inc.*
*Boston*

**KIM GIRARD'S** article "Baby Bells ring out (CW, Nov. 4) is about nothing more than the regional Bell operating companies (RBOC) wanting more money and offering any excuse they expect will work."

The article says the average Internet call is 20.8 minutes long but gives no data on volume. If Internet calls are, for example, 10% or less of the total volume, then this is a nonissue. The time of day for peak Internet usage is much later than the traditional peak time for voice calls.

The RBOCs should be asked tough questions when they put on their pirate hats and go after more money from the public. And the media should be demanding answers rather than treating their propaganda as gospel.

*George Gladfelter*
*Rapid City, S.D.*
*ggladfel@msmailgw.sdsmt.edu*

[illegible]

COMPUTERWORLD

*Leadership Series*

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NOT people

# IS executives can cut costs without layoffs, if they think in terms of processes and activities rather than departments and salaries.

by Tony Hope and Jeremy Hope

Every IS manager is under pressure to reduce costs. In the IS department, cost reductions tend to fall on people, because people represent the lion's share of cost budgets.

Fewer and fewer analysts, programmers and support personnel are left to cope with the same volume of work. The results are familiar: declining morale, lower quality work and dissatisfied customers, both internal and external.

Part of the problem is that accountants measure costs in terms of salaries, benefits and overhead, rather than in terms of the work people do. We suggest that by looking at costs through a different lens — the work process — IS managers and their accounting colleagues will be in a much better position to reduce costs without

Illustrations by James Yang

placing themselves under the constant pressure of staff reductions. If managers cut the workload instead of the workforce, they can lower costs and improve efficiency.

## The Cost Budgeting Mentality

Let's start by looking at how the traditional cost-management system works.

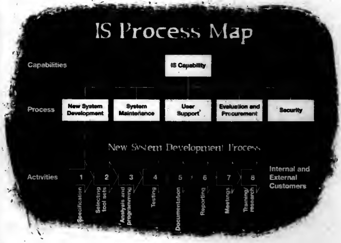
Suppose you are the manager of an IS department that serves a range of business units. You are about to submit next year's budget for the system development department. Cash is tight, and you have been told to reduce the coming year's costs by 10%. Your accountant reckons that six jobs will have to go, but you fail to see how next year's planned work program can be maintained without these people. Last year's expenditures and next year's budget are presented for your approval (see "A Line Item Budget View," above).

**A Line Item Budget View**

Your inclination is to accept the inevitable and cut the six jobs. After all, the only apparent alternatives are to cut salaries and upset all of the staff, or to cut certain discretionary expenses, which would have only a limited effect.

Before making the final decision, however, you ask a consultant for a different presentation of the department's costs.

In his presentation, the consultant first outlines a "process" view of the department's work (see "IS Process Map," below). He shows the IS capability and its various processes, and he reveals that the processes can be subdivided into "activities." A


IS Process Map
Capabilities
IS Capability
Process
New System Development
System Maintenance
User Support
Evaluation and Procurement
Security
New System Development Process
Activities
1
Specification
2
Selecting tool sets
3
Analysis and programming
4
Testing
5
Documentation
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Reporting
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Meetings
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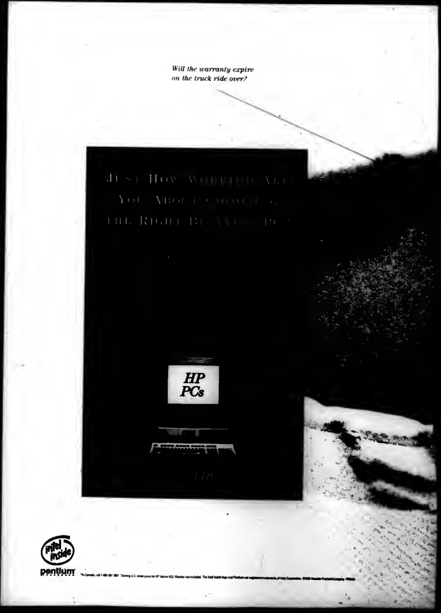
Internal and External Customers



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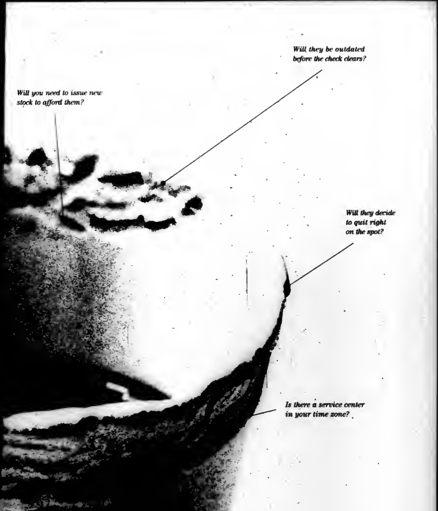
Will they be outdated before the check clears?
Will you need to issue new stock to afford them?
Will they decide to quit right on the spot?
Is there a service center in your time zone?
HEWLETT PACKARD

| Activities | *Total Costs* | *Value Adding* | *Non-Value Adding* |
|---|---|---|---|
| 1 Specification | $400,000 | $400,000 | |
| 2 Selecting tool sets | $200,000 | $200,000 | |
| 3 Analysis and programming | $2.8M | $1 8M | $1M |
| 4 Testing | $1M | $600,000 | $400 000 |
| 5 Documentation | $300 000 | $300,000 | |
| 6. Reporting | $100,000 | $100,000 | |
| 7 Meetings | $800,000 | $200,000 | $600,000 |
| 8 Training/research | $400,000 | $400,000 | |
| *Totals* | *$6M* | *$4M* | *$2M* |

process, he explains, is a number of sequential work activities with a beginning, an end and clearly identified inputs and outputs. Activities are identifiable and measurable pieces of work that constitute the process.

In the case of "new system development," the consultant breaks the process down into eight activities: specification, selecting tool sets, analysis and programming, testing, documentation, reporting, meetings and training/research. He then presents the revised costs of each of the activities, separating out value-adding and non-value-adding costs (see "A Process View," above).

Naturally, you ask how he came up with these numbers.

First, the consultant says, he had to explain to employees that the purpose of the review was to improve productivity, *not* to cut jobs. This enabled him to gain the trust and cooperation that is essential if employees are to provide a log of their non-value-adding time. To do this, each person first must understand which activities add value, so they can tell (by exception) when time is spent on non-value-adding work.

## Breaking Down the Workload

The consultant then offers the following example: If the activities of a programmer (let's call her Sally) include programming, reporting and attending meetings, but she finds she spends some of her time on other non-related work, or on corrections and reworking, she then knows that such work is non-value-adding and that this time needs to be recorded as such.

This time can then be "costed" by first applying costs to each activity, and then extracting the proportion of time and, ultimately, money spent on non-value-adding work.

Here's how it works: Let's say Sally's standard time is set at 80% programming, 10% reporting and 10% meetings, and her total costs, including her salary, travel and share of departmental costs, amount to $6,000 a month. Sally finds, however, that 40% of her programming time has been spent on non-value-adding activities. We can then calculate this time to be worth $1,920 a month ($6,000 x 80% x 40%).

The consultant then returns to his analysis of your processes and costs. The revised analysis, he says, shows that the costs of activities that add value for the customer amount to only two-thirds of last year's total. One-third of the costs were created by work that should not have been necessary in the first place.

A more detailed investigation of the numbers shows that the analysts, programmers and testing personnel were spending much of their time supporting the needs of departmental users and salespeople throughout the company. This time went unrecorded and unrecognized in the cost budget. User problems were often insignificant, and most could be overcome with more user training.

Moreover, these departmental users had an external support group, but often chose to use in-house analysts and programmers, who were more easily accessible and whose time didn't add to their own departmental costs. Analysts and programmers were also frequently disrupted by salespeople, who wanted help with demonstrations.

All of this may be valuable work, but it is not what these highly skilled technicians are paid to do. Moreover, staff members were frequently called to headquarters for budget review and other senseless meetings, which added further unnecessary costs and detracted from their work.

By eliminating these costs, or at least charging them to the respective departments, a better picture of IS spending emerges. The six threatened jobs can likely be saved.

Budget reviews should be a time for strategic questions, such as "Are we doing the right work?" and "How can it be improved?" Instead, most dissolve into petty negotiations about increases or decreases in accounting costs. What a wasted opportunity!

## Deriving the Real Numbers

Studies have repeatedly shown that between 20% and 50% of costs add no value for the customer. At one sales division of a major computer manufacturer in Britain, for example, a six-month study showed that 35% of all costs were wasted.

The study found that 76% of deliveries were incorrect, 53% of configurations were wrong the first time, and 45% of orders needed processing more than once. The exercise paid for itself handsomely when the company "recovered" most of these wasted costs within a year or so.

The picture in an IS department is likely to be similar to this company's experience. But how can we derive these types of numbers if the accounting numbers don't help?

The first step is to think in terms of processes and activities rather than departments and salaries.

The process perspective, a centerpiece of the total quality management and re-engineering movements, offers managers

By eliminating costs that don't add value, a better picture of IS spending emerges.

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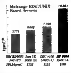

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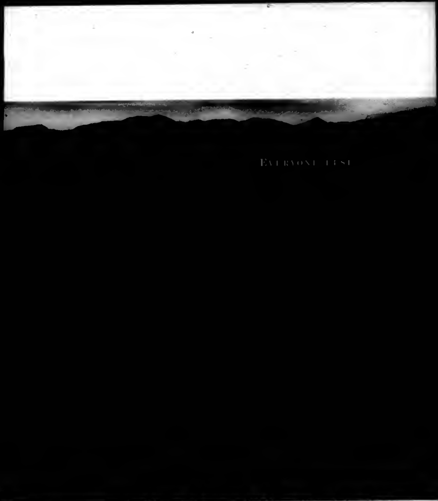

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a clearer view of what work should be done, and, when new technology is applied, how such work can be done faster and with greater quality and efficiency.

When a life insurance company spent $2 million to computerize its processing and claims operations in the early 1980s, it found that it got almost nothing for its expenditure: It still required 27 working days and 32 clerks in three departments to handle a policy conversion.

Only after the company changed how it organized and managed its workforce — relying on semiautonomous process teams of five to seven people, upgrading training and skills, and paying more for the more responsible and more skilled workers — did case-handling time drop and service complaints virtually disappear.

Processes have owners or leaders, and they have customers, either internal or external. Thus, for each activity within the process, we can ask: "Does it add value for the customer?" and "How well is it performed?" If the answer to either of these questions is less than 100%, then excess costs are being incurred.

The language of processes and activities will be familiar to anyone who has an understanding of activity-based costing (ABC), but that's as far as it goes. ABC is typically used as a better method of attributing *existing costs* to products and customers. Our interest is in eliminating *unnecessary costs* and thus improving the quality and speed of process work.

By continuously improving processes, we will begin to see significant productivity gains, particularly from highly qualified specialists.

Management guru Peter Drucker had the right idea in 1963, when he said, "There is surely nothing so useless as doing with great efficiency what should not be done at all."

## Some Practical Steps

So what practical steps can we take to weed out this unnecessary and costly work?

We can make considerable progress by undertaking some basic process and activity analysis and then asking a series of searching questions. The 80/20 rule definitely applies: 20% of processes are likely to deliver 80% of the value, and 20% of activities will probably cause 80% of the costs and add little value.

### To Improving IS Performance

**Explain to employees that the purpose is to improve productivity and customer value, not to "spy" on them.**

**Create process maps and list major identifiable activities.**

**Question each process for its strategic importance.**

**Ask of each activity, "Does it add value?"**

**Repeat the review at least once a year.**

Here are five steps to help IS managers improve performance:

### Step 1

Sell your program. Explain to employees that the purpose of the exercise is to eliminate unnecessary work, improve the productivity of their work and deliver more value to customers, and thus *strengthen* their jobs, rather than allowing it to appear as some form of work study that will lead to new bureaucratic controls.

### Step 2

Review the IS function and decide on its constituent processes. Include all the people and support costs that comprise the process from beginning to end. Think of each process as a self-contained business (this may involve people not previously thought of as being in the IS department), and make a flow chart with each step of the work, thus arriving at a list of activities.

### Step 3

Question each process. Take, for example, "user support" or "system maintenance" and ask if it is essential for meeting the firm's strategic targets. Can the process be done more cheaply and efficiently by outsourcing it?

### Step 4

Question those activities that fall within the most strategic processes, then choose those activities with the highest proportion of cost. Ask employees to record their time for a period of, say, three months. Question again the relevance of activities. Are they necessary? What would happen to the performance of the process if they didn't exist? Remember, the fewer the steps in the process, the more efficient it is. Are employees distracted by

# The Objective is to eradicate years of clutter from work processes.

helping other people solve their problems (as in the earlier example)? While we are not suggesting they should never help others, you may well find that the real scale of the problem is far greater than you imagined.

## Step 5

Implement your proposals, and follow up. Repeat this process every 12 months, until unnecessary work and poor quality is eliminated from the system. The cost savings will be dramatic, and your employees will be happier. Once you have done this, call a meeting of departmental managers and pass the message on.

By adopting this approach, one division of a multinational computer company discovered that its non-value-adding costs amounted to a staggering 40% of total costs, revealing a savings opportunity that dramatically affected its profitability.

It is important, however, to approach such a review in the right way. The objective is not work study or time-and-motion analysis, but the eradication of years of clutter and debris from work processes, resulting in more satisfied customers and more secure, value-adding jobs.

Significant progress has been made in recent years in the battle against non-value-adding work. For example, in the computer and insurance companies previously mentioned, noticeable changes were seen in managers' and workers' attitudes. They started to think and work as a team, with the common purpose of satisfying customer needs. The change did not occur through attending seminars or heeding management exhortations, but through trust and understanding reinforced by the new information in hand.

By getting people to work together and sharing information, management at these companies began to cut the workload rather than the workforce, and, thus, make the sort of fundamental changes that would scarcely have been possible with the previous cost-cutting mentality. ◆

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***About the authors:***

Tony Hope and Jeremy Hope are co-authors of *Transforming the Bottom Line: Managing Performance with the Real Numbers*, recently published by the Harvard Business School Press (Cambridge, Mass., $27.50, 256 pages). The book includes a more detailed dis- [illegible] ductions and generate data on value- [illegible] Tony Hope is a visiting professor at [illegible] Fontainebleau, France; Jeremy Hope is [illegible] England. Both brothers are chartered [illegible] may be reached at lh23@dial.pipex.com.

TRANSFORMING THE BOTTOM LINE

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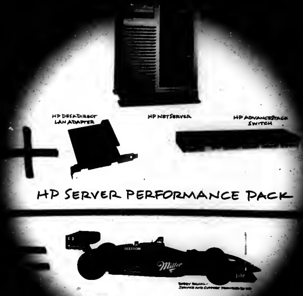
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COMMENTARY

# IBM isn't really 'back'

DAVID MOSCHELLA

IT'S GREAT to see IBM growing and solidly profitable again. So many customers are so dependent upon IBM that when it was losing billions, nerves were rattled well outside of Armonk, N.Y. But beyond the tripling of IBM's stock price, is the media correct in saying that "Big Blue is Back?"

Since he assumed command of the company in 1993, Lou Gerstner's biggest strategic decision has been to restore IBM's traditional role as a customer-centric, united company. He put an end to the idea of IBM as a conglomerate of divisions, such as Pennant, Adstar, ISSC, the PC Co. and so on. Customer confusion and business unit infighting were becoming unacceptable. Gerstner also made it clear that, unlike Microsoft, IBM won't compete with its customers.

At first glance, the results seem to speak for themselves. But IBM's success stems largely from its huge legacy environments. The bold bet on CMOS mainframes is paying off handsomely; the AS/400 line continues to thrive beyond almost everyone's expectations; and IBM's services business, though not as profitable, has grown dramatically.

But problems are mounting in markets that are more open to competition. IBM has stabilized its PC market share, but Compaq remains the clear industry leader. The Lotus and Tivoli acquisitions have gone well, but internal software efforts have produced little. The high-profile PowerPC, OS/2 and microelectronics initiatives have been major disappointments. Even in the mainframe space, EMC has made such rapid gains in storage that IBM has resorted to selling StorageTek subsystems. Highly focused companies — Intel, Microsoft, Oracle, Cisco, Compaq, EDS — continue to drive the industry.

Perhaps more troubling, the very core of the hardware and software business is now defined by Intel, Windows, Windows NT, Unix and the relational database. IBM is largely watching from the sidelines. Things aren't much better in the emerging Internet world. Other than its Lotus' Domino, IBM has only a minor presence in the World Wide Web hardware and software markets, and IBM lags badly in the booming network equipment business.

In this sense, IBM is becoming what it chose to become. Its integrated, solutions-oriented organization is optimized for enterprise customer *services*. By contrast, the autonomy and accountability of a divisional structure would produce more competitive *product* offerings. IBM wants to thrive with both products and services, but that may be impossible.

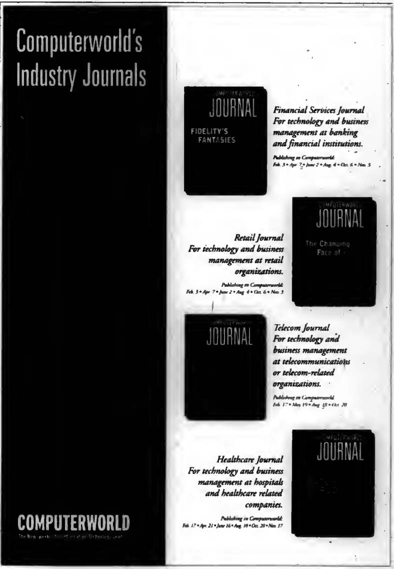
Where will this lead? An extrapolation of current trends would have IBM continuing to sell products into its legacy base but increasingly relying on others in most emerging markets.

Strategic acquisitions could strengthen its product portfolio, but IBM's real energy would go toward expanding its global services business.

IBM's goal should be to control the center of electronic commerce services, with leadership in the intranet market just being a necessary first step. That is a huge and worthy long-term opportunity, with more than enough room for IBM, EDS and others.

If that's the plan, IBM isn't so much "back" as it is repositioned to fight for services industry leadership.

*Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.*



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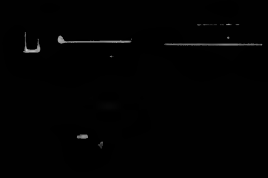

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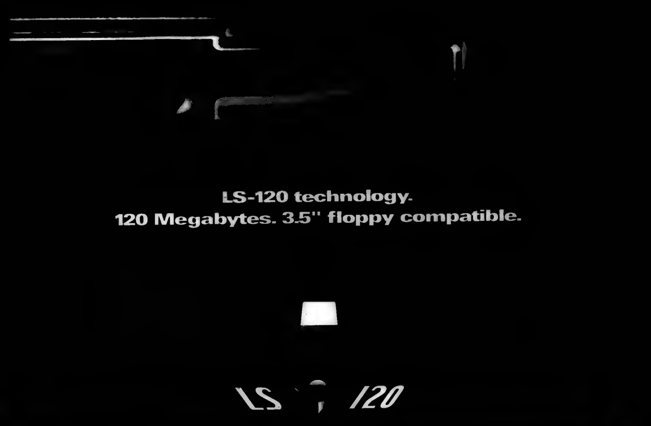

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# Briefs

### DG ships servers

Data General Corp. last week introduced three AViion servers based on Intel Corp.'s 200-MHz Pentium Pro chip. The AV 1600 tower is a low-cost, entry-level model. Pricing starts at less than $3,900, and the tower features up to 512M bytes of Error Checking and Correcting memory.

The dual-processor AV 2600 comes with an integrated 512K-byte cache and up to 1G byte of memory. Pricing starts at less than $8,100. The rack-mounted AV 5600R supports up to two AViion servers and as many as eight Pentium Pro chips. It costs $13,300.

### Encore's Infinity R/500

Encore Computer Corp. last week introduced the Infinity R/500, which it said will allow heterogeneous clusters to work together.

The Infinity R/500 allows users to configure the machine with a variety of CPUs, I/O buses and operating systems, according to the Fort Lauderdale, Fla.-based company. The Infinity R/500 costs $15,000 to $60,000 for up to eight nodes.

### IBM unveils A/V server

IBM has announced VideoCharger Server for AIX, an RS/6000 server that delivers audio or video to World Wide Web browsers.

VideoCharger uses Real Time Protocol to stream audio and video data over the network without requiring users to download a separate file and then play it. VideoCharger costs $28,600 and will be available by March.

### 1995 U.S. MAINFRAME SHIPMENTS*

Total shipments - 506

| | |
|---|---|
| IBM | [illegible] |
| Amdahl | [illegible] |
| Hitachi Data Systems | [illegible] |
| Unisys | 6.3% |
| Other | 2% |

*Units costing $3 million and more

Source: International Data Corp., Framingham, Mass.

# High hopes for LCD monitor

▸ *Wyse model offers flexibility, touch screen*

*By April Jacobs*

WYSE TECHNOLOGY, INC next quarter plans to introduce an LCD monitor that offers features such as touch screens and an infrared window for wireless data transfer.

The WY-9307, which the San Jose Calif-based company plans to ship in the first quarter of next year, looks similar to its standard CRT cousins The difference is it has a flat screen and a modular, thin design, so it can be mounted on a wall or desktop in various arrangements

Company officials said they hope the monitor will take off in environments such as retail, banking, or health care industries End users in those fields want monitors that are cleaner in appearance and allow for applications where magnetic stripe readers, touch screens, speakers and microphones are useful

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Wyse Technology plans to offer its WY-9307 for $1,695, several hundred dollars more than users might pay for a comparable CRT setup

Don Baune, a senior systems analyst at the University of Utah in Salt Lake City, said he is considering buying LCD monitors for the university's teaching hospital in areas where magnetic fields are high, such as where Magnetic Resonance Image (MRI) scans are performed

The LCD monitors are unaffected by the magnetic fields emitted by the MRI testing equipment and could be used in those areas, Baune said The Wyse monitors also are spill-proof, which allows them to be cleaned with disinfectants — another benefit in a health care environment.

Baune said he probably won't purchase any LCD monitors until later next year because he would like to see prices drop and screen image resolution go up. "Right now, lower price is the big issue," he said.

Wyse Technology's [illegible] monitors feature touch screens

# Data General wins storage deal

▸ *Canadian defense department to install Clariion RAID systems*

*By Matt Hamblen*

THE CANADIAN DEPARTMENT of National Defence recently decided to install Data General Corp.'s Clariion storage arrays, citing their competitive cost and ability to attach to both Unix and Windows NT servers

The $1.3 million deal includes 40 Open Clariion RAID Series 2000 systems to be housed in military bases and facilities throughout Canada. Clariion Canada in Mississauga, Ontario, is a business unit of DG in Westboro, Mass.

Canadian officials were bound by law to choose the lowest compliant bid. Twelve bids were made earlier this year, but Clariion was the lowest one that complied in every detail to the requirements of the bid, defense officials said.

The field included Digital Equipment Corp. in Maynard, Mass., Open Storage Solutions in Toronto, G.E. Capital Services Technology Management Services in Stamford, Conn., DynaTek Automation Systems, Inc. in Bedford, Nova Scotia, Avnet Computer, a division of Avnet, Inc. in Tempe, Ariz., and Sidus Systems, Inc. in Austin, Texas

"Clariion was a better unit and more capable of connecting to different platforms. Flexibility in the connections to other systems mattered," said Mark Scherling, a project leader and senior consultant at the department's Defense Information Network

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The defense department

Data General, page 53

### SPYGLASS' REMOTE MOSAIC

- Brings Web browsing capabilities to devices such as PDAs, phones and pagers
- Has a lightweight viewer and a proxy browser that runs on a service provider's server
- Will be available Q2 1997
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# Windows CE PDAs take center stage at expo

*By Mindy Blodgett and Justin Hibbard*

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**Data General**, page 53

Clariion Series 2000

- Number of drives
- Memory storage
- Cache memory
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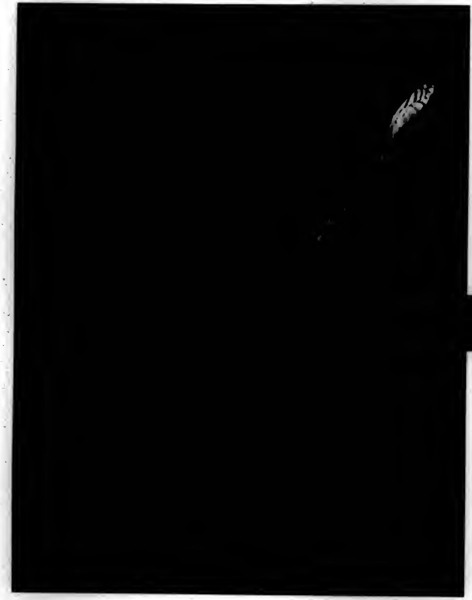

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## NEW PRODUCTS

**AURA SYSTEMS, INC.** has announced Aspects, a line of multimedia speaker systems for desktop computers.

According to the El Segundo, Calif., company, Aspects uses NeoRadial technology to create big woofer bass sound from small drivers. Vibration is reduced with a wooden enclosure.

Pricing runs from $69.95 per pair for the Aspect 10 model to $99.95 for each Aspect 40 speaker.

**Aura Systems**
**(310) 643-5300**
**www.aurasystems.com**

**SEJIN AMERICA, INC.** has announced a plug-and-play wireless keyboard, SPR-8695WP, for Windows 95.

Officials at the Santa Clara, Calif., company said the compact keyboard uses Freeboard technology to allow reliable operation from as far as 20 feet and real-time key response.

The SPR-8695WP costs $99.

**Sejin America**
**(408) 980-7550**
**www.sejin.com**

**DYNAMIC PICTURES, INC.** has announced Oxygen 102, a graphics accelerator card for PCs.

According to the Santa Clara, Calif., company, the card delivers three-dimensional graphics. It was designed to accelerate all OpenGl and Heidi-based applications for animation, visualization and computer-aided design.

The Oxygen 102 card costs $1,495.

**Dynamic Pictures**
**(408) 327-9000**
**www.dypic.com**

**KINESIS CORP.** has announced a QWERTY/DVORAK convertible computer keyboard.

The Bothell, Wash., company said the keyboard provides comfort and increased productivity for users. Users can switch between the conventional QWERTY layout and the DVORAK configuration with a simply key combination.

Pricing for the keyboard starts at $265.

**Kinesis**
**(206) 402-8100**
**www.kinesis-ergo.com**

**SHARK MULTIMEDIA, INC.** has announced SeeQuest, hardware and software to transform a Windows PC into a desktop videoconferencing workstation.

Officials at the Santa Clara, Calif., company said the kit provides real-time, full-duplex audio and video for a Windows PC.

The kit includes a 33.6K byte/sec. digital simultaneous voice and data modem for use over an ordinary telephone line, a color or black-and-white video camera, Connectix Corp. VideoPhone, microphone and audio/video software.

SeeQuest costs $479.

**Shark Multimedia**
**(800) 800-3321**
**www.sharkmm.com**

**KDS USA** has announced two large-screen multimedia monitors for sharp image colors and detail to be used by graphics professionals.

According to the Garden Grove, Calif., company, Visual Sensations VSX-20 and VSX-21 are 20- and 21-in. monitors that are compatible with PCs and Macintoshes. Both automatically adjust the horizontal scanning frequency and have one-year labor warranties.

The 20-in. monitor costs $1,299, and the 21-in. model costs $1,599.

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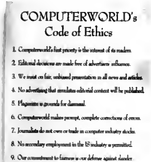

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Users ask mall vendors: "Can't we all get along?"
Visual Basic, Java vie for 'net crown

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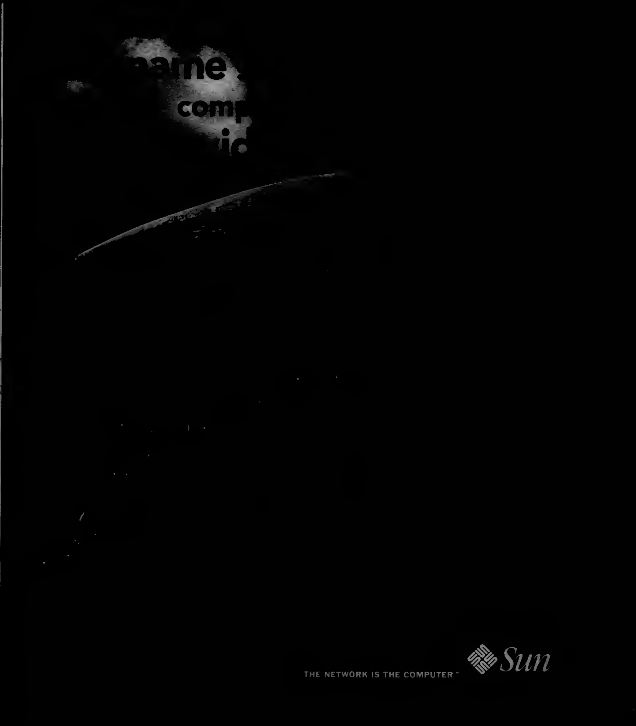
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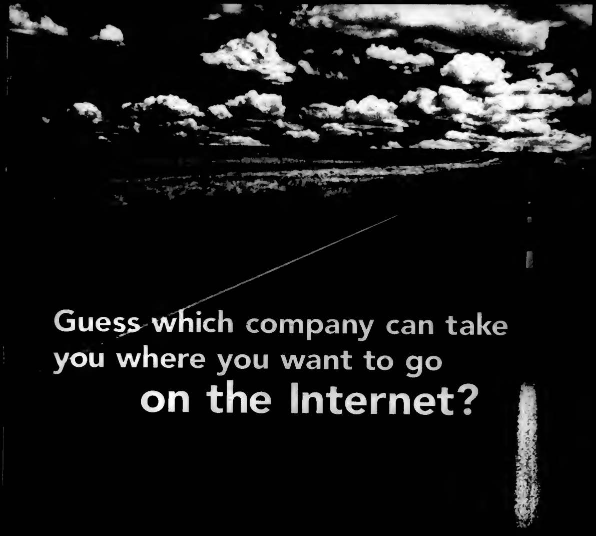
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# Specialized servers more prevalent

By *James Niccolai*

A MOVEMENT is quietly underway in distributed client/server environments to deploy specialized servers, according to a study conducted by the Business Research Group

Of 250 companies surveyed more than one-third have implemented so-called multitier computing environments, and two-thirds said they will have done so by 1998

Servers tailored for databases, applications, network services, remote access and the Internet are rapidly becoming the norm, thanks to benefits in performance, scalability and manageability, the study found

**WINDOWS NT USE**

The Business Research Group in Newton, Mass., also found that use of Windows NT is becoming more pervasive at the expense of Unix and Novell, Inc.'s NetWare

Windows NT is used by 28% of the respondents, and 41% said they plan to use it by the end of next year.

Windows NT use is strongest for remote access and applications servers It is weakest for multifunction servers, where NetWare still reigns, according to the Business Research Group's findings

Unix vendors have to overcome issues of market fragmentation, complexity of use and high cost if they are to continue to compete according to the study

The study also indicates that the network computer — touted by the likes of Oracle Corp and Sun Microsystems, Inc. — may have a role in terminal replacement due to its relatively low cost of ownership and management

*Niccolai writes for the IDG News Service in Boston.*

# Windows CE PDAs take center stage

CONTINUED FROM PAGE 45

ploying laptop computers in the field

"With these handhelds, the officers could just carry them to crime scenes and send in reports without having to lug around notebooks," Herkman said

**HOLDING OFF**

Other users said they are taking a wait-and-see attitude toward the devices

"I think it might be better to wait four or five months down the road to see what happens to the hardware," said Dale Reed, a PDA/mobile specialist at Chevron Information Technology Co. a division of Chevron USA, Inc in San Ramon, Calif

"I'm trying to keep the users from running out and buying things that may not have the functionality they need," Reed said.

**VENDOR SUPPORT**

Several companies recently announced products that support the Windows CE system Those vendors include the following:

- Digital Equipment Corp in Maynard, Mass., said Microsoft would make sure Windows CE supports Digital's StrongArm RISC microprocessor in-handheld computers and smart phones
- Microsoft said it would support Motorola, Inc.'s family of PowerPC MPC 8XX microprocessors for portable devices, including PDAs
- Spyglass, Inc. in Naperville, Ill., announced several software products aimed at providing better connectivity to the Internet for PDAs and handheld computers, including Remote Mosaic (see chart, page 45).

Ron Rappaport, an analyst at Zona Research, Inc. in Redwood City, Calif., said users now want Internet connectivity on all devices, including PDAs

They want "to have information wherever and whenever possible," Rappaport said.

# Data General wins storage deal

CONTINUED FROM PAGE 45

needed to maintain instant availability of online information and ensure data integrity so that each of the Canadian locations could work independently if connections among sites were lost Other vendors offered such opportunities but at higher cost, officials said

The department is also in the process of reducing the workforce at its headquarters by 7,000 by 1999 and reducing the amount of paper used each year

**CUTTING PAPER COSTS**

Within the defense department headquarters, there are an estimated three filing cabinets per person, and even a 5% dent in the cost of processing paper will have paid for the Clariion system, officials said

Anders Lofgren, an analyst at Giga Information Group in Cambridge, Mass., said he was surprised that open storage systems vendor EMC Corp. in Hopkinton, Mass., wasn't among the bidders, considering its growth in the market. But he said it is hard to judge how vendors set the price of their bids in the Canadian contract.

Analysts at International Data Corp. (IDC) in Framingham, Mass., list Clariion as the leading OEM supplier in the Unix RAID market. It had 1996 revenue of $329 million, which is 33% of the worldwide market.

**MULTIPLE CONNECTIONS**

Robert Gray, research manager for storage subsystems at IDC, said even though the Canadians were required to pick the lowest bidder, it is a plus that the Clariion products can be connected with multiple servers. "Clariion is one of the few that can do so," he said.

Clariion offers a range of disk array storage products Its entry-level Model 150 system was designed to support PC LANs. Series 2000 systems, in use in the Canadian defense department project, were designed for midrange open systems users. The high end of Clariion's disk array family, the recently unveiled Series 3000, provides up to 3T bytes of storage.

## SHORTS

### Processor shipments

**Shipments of microprocessors this year are 20% higher than last year, and next year's shipments are expected to grow by 32%, according to a market study by Forward Concepts Co. in Tempe, Ariz., and Micrologic Research in Phoenix.**

**Strong PC sales contributed to this year's microprocessor sales, which are expected to finish the year at $17.1 billion, up from $14.3 billion last year. The 1997 forecast is based on demand prompted partly by the expected release of Intel Corp.'s new multimedia Pentium processors. Continuing upgrades to Windows 95 by companies will also fuel demand, according to the report.**

### TCP/IP for AS/400

**Perle Systems, Inc. in Toronto this week will update its AS/400 controller with support for TCP/IP. The 494E controller acts as an SNA-to-TCP/IP gateway so AS/400 shops can eliminate SNA networking issues from the wide-area network while retaining SNA devices such as 5250 terminals or SNA network printers. Current 494E users can download the TCP/IP options free of charge from www.perle.com, but they will have to buy more memory to handle processing requirements.**

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# Briefs

## PORTABLE PLATFORMS

**Preferred operating systems for portable computers**

| Platform | 1996 | 1999 |
|---|---|---|
| Windows 3.1 | 34% | 4% |
| Windows 95 | 23% | 30% |
| DOS | 8% | 2% |
| Windows NT | 6% | 26% |
| Unix | 6% | 8% |

Base: 51 IS managers

Source: The Yankee Group, Boston

### Middleware relied

While rivals such as Informix Software, Inc. and Oracle Corp. are developing object/relational databases, Microsoft Corp. instead plans to rely on middleware to hook its SQL Server database to objects stored in spreadsheets, image management systems and other applications. That capability will be provided through OLE DB, a Microsoft-designed data-access interface that the company said will be built in to the next version of SQL Server, scheduled to ship in the second half of next year, said officials at the Redmond, Wash., company.

### Vendors on same map

Several geographic information system (GIS) vendors have agreed to follow the same map. The vendors — including Intergraph Software Solutions, Inc., Informix Software, Environmental Systems Research Institute, Inc. and MapInfo Corp. — said they will support some of the platform interoperability standards.

Specifically, the vendors will endorse the Windows platform sought by the Open GIS Consortium, Inc. (OGIS). The OGIS is an organization of vendors attempting to establish open standards for the GIS industry. The vendors said they will adopt product interoperability [illegible] the bounds of [illegible] as the OLE [illegible] as [illegible] platforms [illegible] Open Database Connectivity.

# Claims off-kilter

▸ *DataBlade users unfazed by Oracle salvo*

*By Craig Stedman*

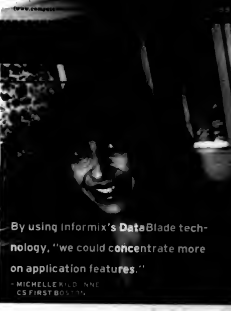
A CAMPAIGN THAT Oracle Corp. is waging to sow doubts about the safety of Informix Software, Inc.'s DataBlade plug-ins doesn't seem to have scared many users who are looking closely at Informix's new Universal Server database.

Oracle has worked mightily for the past month to discredit the DataBlade approach as a potential cause of database crashes. DataBlades are add-in modules that link directly to a database, allowing Universal Server to support objects and nonrelational data such as video, audio and text.

Safety is a valid concern, especially when third-party plug-ins are involved, said some prospective users after this month's announcement of Universal Server [CW, Dec. 9]. The object/relational hybrid is due to ship by year's end; Oracle's object-enabled Oracle8 database isn't expected until next summer.

But several users with DataBlade experience described Oracle's claims as overblown, provided that an Informix certification program for third-party DataBlades weeds out bad code as promised. They said their

**DataBlade**, page 57



By using Informix's DataBlade technology, "we could concentrate more on application features."

– MICHELLE KILD NNE
CS FIRST BOSTON

# Easing group projects

▸ *Team Manager can help manage workgroups*

*By Jeffrey Gordon Angus*

**PRODUCT REVIEW**

THE SINGLE MOST valuable computing task you can do on a network is to manage and track workgroup projects. Microsoft Corp. next year will introduce a program designed to help people who are working together on projects to coordinate, consolidate and track the team's activities.

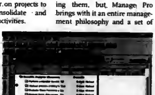
Team Manager 97 integrates tightly with Microsoft's Office 97 hub, Outlook, and is a positive first effort for the company.

Outlook is Microsoft's replacement for Exchange and Schedule+. It is a console for managing mail, personal and workgroup information, documents and light projects.

The only offering that might be parallel to Team Manager is Manage Pro 3.2 from Emeryville, Calif.-based Avantos Performance Systems, Inc. The late beta of this first version of Team Manager 97 is less evolved than Manage Pro but may have advantages for specific users. Users who are looking for such a tool need to consider both offerings.

Both products require that the whole team is committed to using them, but Manage Pro brings with it an entire management philosophy and a set of mutually reinforcing methods to drive the success of the organization. Team Manager succeeds just as well at the task-management and individual progress tracking level but

**Team Manager**, page 57



**Team Manager offers project leaders access to various types of updates – such as project costs – at the click of a tab**

**DATABASES**

# Sybase goes for decision support

*By Craig Stedman*

DATABASES DESIGNED expressly for decision support can keep end users from twiddling their thumbs while running queries. But they also make information systems managers jump through different hoops from what they are used to with regular relational databases.

"It's a different animal, so we have to kind of go back to the drawing board and rearchitect things," said Chris Lange, data warehouse architect at National Semiconductor Corp. in Santa Clara, Calif. The chip maker is testing Sybase, Inc.'s Sybase IQ database and expects to shift its data mining to the decision-support software next spring.

For user-written queries that can take unpredictable twists and turns, a decision-support database should deliver big speed boosts over relational software, according to Lange and several other IS managers. But it may require different approaches to configuring, loading and backing up data, they said.

**EXPANDED CAPABILITIES**

Sybase in Emeryville, Calif., introduced Sybase IQ last March and announced an updated version on Dec. 3 with faster performance, expanded platform support and parallel file-loading

**Decision support**, page 59

# PC makers feel Windows 95 pinch

*By Laura DiDio and April Jacobs*

PC MAKERS ARE under pressure from Microsoft Corp. to preload Windows 95 and ensure that their systems boot to its main window before anything else.

Although large corporate users are generally unfazed, some small and medium-size businesses are feeling the pinch.

This isn't an isolated incident. Just last week, hardware OEMs — led by IBM and Netscape Communications Corp. — publicly charged that Microsoft now is seeking to enforce a clause in their licensing agreements that would require the PC makers to boot the Windows operating system before anything else [CW, Dec. 9]. The implication, the rival vendors said, is that Microsoft gains an advantage by

**Windows 95**, page 64

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# DataBlade users unfazed

CONTINUED FROM PAGE 55

companies haven't run into problems with DataBlades that were written for the object-enabled Illustra database. Informix bought Illustra in February and is merging the product with its relational engine to create Universal Server.

"I don't think there's a big risk," said Michelle Kildunne, director of fixed-income trading technology at CS First Boston Corp. in New York. The investment firm built an Illustra-based financial research library last spring. The library uses a World Wide Web DataBlade owned by Informix and a text-search module that was written by a third-party vendor and is sold by Informix. The company plans to migrate to Universal Server in January, Kildunne said.

### USERS SAY IT'S SAFE

Concerns about the safety of new technologies "is almost a knee-jerk reaction. But I've found [DataBlades] to be perfectly safe," said Harry Mendell, a vice president in the market risk unit at Morgan Stanley & Co. in New York.

Morgan Stanley is prototyping a time-based analysis application that uses the Illustra database and both Informix-supplied and internally developed DataBlades. The company isn't treating the DataBlades differently from other software, Mendell said. "There's nothing that's crash-proof," he said.

> **Concerns about the safety of new technologies "is almost a knee-jerk reaction. But I've found [DataBlades] to be perfectly safe."**
>
> **– Harry Mendell, Morgan Stanley**

Oracle executives have contended in speeches, interviews and white papers that plugging add-in modules directly into a database could bring down the whole thing if faulty code isn't detected. Informix's testing of third-party DataBlades could get unwieldy as more and more vendors start to write modules, Oracle officials claim.

But Malcolm Colton, director of database marketing at Informix, said DataBlades will be tested "far more than the average IS department does with its applications." Even if a faulty DataBlade did get through, it would pose a risk to only a single thread in the database, he said.

Sabre Decision Technologies, the software development unit of AMR Corp. in Fort Worth, Texas, is beta-testing Universal Server for potential use in an upcoming object-enabled data warehouse.

Because of DataBlades and its support for objects, Universal Server "will be tougher to maintain than a standard relational database," said Brad Jensen, a vice president at Sabre. "But there's no free lunch, and we don't have too many other choices now."

"I guess if I was in Oracle's shoes, and I didn't have a competitive product, I'd probably say the same thing they are," said Alfred Watkins, a senior technical staff member at AT&T Laboratories in Holmdel, N.J. AT&T is looking at developing Internet-based multimedia applications using multiple databases for external customers.

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# Team Manager eases group projects

CONTINUED FROM PAGE 55

doesn't extend as far. Manage Pro, for example, has a context-sensitive management coach built in; at each screen, a user can get product help and skills reinforcement.

Microsoft officials say they have designed Team Manager for a different kind of manager than they would expect to use a project management product, such as Microsoft Project or Project Scheduler from Scitor Corp. in Menlo Park, Calif. Team Manager is meant for functional managers who chronically juggle a mix of projects that carry specific deadlines and ongoing activities that have no due dates. It is for managers who are interested in meeting deadlines and maintaining priorities to a task.

### EXCHANGING MESSAGES

Team Manager uses an electronic-mail system or shared network folder to help users exchange proposed task assignments, status reports and notes. The person who acts as the group's manager outlines the tasks and components of each project and sends the assignment to a staff member. If the staff member accepts the task, it goes into his task list.

Alternatively, the staff member can send the task back for negotiation. But once a staff member has accepted, he is responsible for maintaining progress reports on his tasks. These progress reports are sent to the manager who clicks a button to incorporate them into the main status database.

There are several features in Team Manager that I love. It effectively uses group psychology by publicly showing which status reports were delivered on time and which were late, thus creating peer pressure to keep the group informed. Microsoft understands the most productive way to work in groups is with less hierarchy and more collaboration.

### PICKY, PICKY

And, unlike traditional project management programs, the predesigned reports in Team Manager support the nitpicky detail management most staff managers now have to execute in "downsized" organizations. Team Manager's reports help leaders make task triage decisions by clearly presenting which tasks are off-schedule and which have priority.

The product allows you to sop up staff information from E-mail directories, which saves time and reduces re-entry errors. It also can be customized to include your choices for views and your preferences for naming methods. I also like the way the product dovetails with the personal task management intrinsic to Outlook.

**PRODUCT REVIEW**

**Microsoft's Team Manager 97**

**B-**

**Microsoft Corp.**
**Redmond, Wash.**
**(800) 426-9400**
**(206) 882-8080**
**www.microsoft.com**

On the other hand, Task Manager lacks the evolved management perspective found in Manage Pro. Manage Pro was designed by professional managera, and it features management advice at every turn. Manage Pro's customization includes templates for many kinds of industries and endeavors.

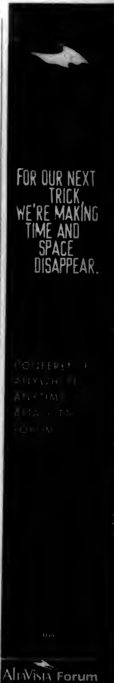
Manage Pro's interface isn't perfect but has been polished with time; Microsoft's interface has some kinks that should get straightened out over time. For example, Team Manager uses colored, underlined text for each staff member, and it looks exactly like a hypertext link in an Internet search engine. It doesn't jump to anything if you click on it, it just makes it easier to read. This could confuse users who have become accustomed to World Wide Web highlighting.

### DESIGN ELEMENTS

Team Manager includes some good design, too. For example, instead of having to type in start and end dates, you can use the mouse to drag a precise selection from a visual calendar, which is quicker and helps you account for days of the week. The interface snags are minor, and most users will find them only irritations until they learn the product.

There is a lot to like in this first version of Team Manager. Even if you aren't going to implement Office 97, it's a worthwhile product for managers who are networked to their workgroups. But if you want to see how far and how fast your workgroup can go, take a close look at Manage Pro, too.

*Angus is a project director at The Data Works Ltd. in Seattle.*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## NEW PRODUCTS

**SMARTPATENTS, INC.** has announced SmartPatent Workbench 4.1, an analytical software tool to help companies electronically search, organize and analyze patents.

According to the Mountain View, Calif., company, Workbench 4.1 will let users analyze their own patents and competitors' patents to gain a business advantage.

Workbench 4.1 is free, but SmartPatents sells a patent database. Pricing starts at $7 per patent.

**SmartPatents**
**(415) 237-0900**
**www.smartpatents.com**

**THURSBY SOFTWARE SYSTEMS, INC.** has announced Dave for the Macintosh, software to share files and printers with Windows 95 and Windows NT networks that use TCP/IP

According to the Dallas company, Dave is for users who want to use only TCP/IP as a network protocol. With Dave, users can access networks as if they were on a local Macintosh.

Pricing starts at $179.

**Thursby Software Systems**
**(817) 478-5070**
**www.thursby.com**

**SOFTTEK, INC.** has announced W.Fax, intranet fax server software.

According to the Trabuco Canyon, Calif., firm, W.Fax lets users point, click and fax directly from a Netscape Communications Corp. Navigator browser.

Pricing starts at $5,500.

**SoftTek**
**(714) 888-1181**
**www.sftek.com**

**CE SOFTWARE, INC.** has announced QuickMail Pro 1.0, cross-platform Internet electronic-mail software for Windows 95 and Apple Computer, Inc.'s Mac OS.

According to the West Des Moines, Iowa, company, QuickMail provides automatic attachment encoding, background mail processing and Message Peek, which lets users view the first few lines of a message before they open it.

Pricing starts at $69.95.

**CE Software**
**(515) 221-1801**
**www.cesoft.com**

**TEXAS INSTRUMENTS, INC.** has announced the Livegear Personal Organizer/Module Pack, software and hardware for synchronizing TI's Personal Organizer and TravelMate 6000 series notebook.

According to the Dallas company, the product lets users carry essential personal information from their TravelMate 6000 with them in a pocket-size Personal Organizer. When users get back to the office, they can slip the product into the module, which fits into the notebook's media bay for synchronization of data in the organizer with data in the notebook.

The Livegear Personal Organizer/Module Pack costs $230. The Windows-based software alone is $100.

**Texas Instruments**
**(800) 842-2737**
**www.ti.com**

**ENTERPRISE RESEARCH, INC.** has released ERI/CICS 2.1, an upgrade to its suite of integrated CICS management tools.

According to the Research Triangle Park, N.C., firm, it includes a single sign-on option for CICS and an application profile editor.

Pricing starts at $18,000.

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FRANKLY SPEAKING

# Hark the herald users sing

FRANK HAYES

THE HOLIDAYS are the perfect time to reflect on the true meaning of ... well, of corporate application development.

Go to any shopping mall in the past few days of the holiday shopping season, and watch the inmates take over the asylum.

The shoppers run in every direction, bouncing from one store to another. They can't find what they want, so they make on-the-fly, seemingly nonsensical substitutions. And tempers flare as time grows short and lines get longer at the cash registers.

What's this got to do with software development? This madhouse is the way business is really done 365 days a year. It's the chaos faced by your users whenever they deal with your company's customers.

No wonder users and software developers always seem to be at each other's throats. Programmers try to work strategically, building the most efficient systems for performing business transactions in a logical, straightforward way.

But users — especially when they're dealing with customers — have to be tactical to the extreme in a world where there is no sanity clause.

When customers change their minds or want something unusual, there's no carefully designed set of project requirements to update. It's find a way — and right now — or lose the sale.

### USER DEMANDS

That's why salespeople and customer-service representatives end up doing unreasonable, ad hoc things that your systems weren't designed for.

They want information in the wrong order. They want unusual combinations of data. They want to back out of completed transactions when a customer makes a new demand. And that wreaks havoc on the nice, orderly systems that programmers like to build. A program designed to work most efficiently — or even just sensibly — won't necessarily map well to the way users will be required to use it.

Of course, knowing you work in a logical world and that your users are neck-deep in chaos doesn't make them easier to deal with. They still add requirements constantly, demand changes and want software yesterday and updates today.

But maybe now would be a good time to think about getting to know your users better — and not just at requirements meetings or holiday office parties.

Pay closer attention to how users deal with customers. Watch users at work, as customers make them back up, change entries or copy information off the screen onto a memo pad.

What users do and why they do it will become increasingly important to you in the next year or so.

Right now, users are the cushion between those customers and the applications you build. If your software has rough spots or is missing functionality, users perform whatever work-arounds they must to send the customer away with a lighter wallet.

But soon you'll be called upon to make your systems available on the Internet. When that happens, there won't be any friendly human sales clerk to smooth over problems in your applications.

You think your users are a pain to deal with today?

Just wait until you're dealing directly with that cantankerous crowd of customers who at this very moment are fighting with elbow-in-your-eye abandon for the last Nintendo 64 in the store.

*Hayes is* Computerworld's *staff columnist.*

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# Sybase IQ

CONTINUED FROM PAGE 55

capabilities. It is trodding a path first blazed by Red Brick Systems, Inc., a Los Gatos, Calif., vendor that has been shipping a data warehouse database since 1992.

The decision-support databases are collections of simple indexes that link files together for querying and nothing else. Sybase IQ and Red Brick would be hopeless at running transactions, but they can zip through queries for which regular databases "would make you sit there until your beard turned gray waiting for an answer," said Stan Dolberg, an analyst at Forrester Research, Inc. in Cambridge, Mass.

For example, Lange said a query that National Semiconductor ran against its booking, billing and backlog data took more than 90 minutes on a Sybase SQL Server database. The same query took just 70 seconds on Sybase IQ, he said. Typically, Sybase IQ ran test queries in about one-tenth the time that SQL Server needed.

But with Sybase IQ, National Semiconductor can no longer spread data across multiple interconnected databases for easier loading and backup, Lange said. "You can't do that with IQ. You have to put everything in a single database," he said. Lange said he also has hit a few bumps, such as limits on the size of numbers that Sybase IQ can handle.

SmithKline Beecham Corp. now separates its querying data across several SQL Server installations for safety's sake. "If one database goes bad, the other two would still be available," said Rob Swift, database manager at the Philadelphia-based pharmaceuticals manufacturer.

"We can't index our traditional relational database to anticipate the different angles people [will] go in."
– Chris Lange,
National Semiconductor

Sybase IQ won't offer that protection, but SmithKline Beecham expects to get 40% to 80% better performance by switching to it, Swift added. Tuning SQL Server to run specific queries faster would be fruitless, he said. "We have no clue what users are going to ask. They're just looking for any patterns they can find in the data," Swift said.

For now, use of decision-support databases remains limited: Red Brick has 150 users, and Sybase said it has shipped Sybase IQ to 185 customers — a drop in the bucket of its installed base.

"It's not an easy sell because most IS people don't want to bring in something that's alien to the databases they know," said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston.

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IDC**INSIGHT**

# Successfully Migrating

Corporate America is fast embracing Windows NT workstation for its desktop computing as it seeks a true multitasking, robust, 32-bit OS with reliability, security, and high performance. The Pentium Pro, offering superior speed and performance, is far and away the preferred platform for NT. These were among the key findings of IDC's recent global survey of 1,500 corporate enthusiastic NT adopters and active evaluators.

International Data Corporation (IDC), the world's leading information technology (IT) research firm, recently surveyed 1,500 medium-sized and large corporations around the world about their advanced desktop PC usage and plans via in-depth telephone interviews. Primarily, the research analyzed how corporations are currently using and adopting advanced Windows NT/Pentium Pro systems and what users found as key drivers and constraints. The study focused on advanced adoption so that organizations adopting less than 10% NT systems among their total systems, within the next two years, were excluded from the survey.

The market momentum for NT/Pentium Pro systems will intensify over the next 3–18 months, especially among U.S. corporations. Key drivers for this upward migration include the accelerated price/performance improvements of the Pentium Pro; the increasing availability of 32-bit applications; and recent release and success of Windows NT Workstation 4.0. IDC predicts 1998 to be the pivotal cross-over year when U.S. Pentium Pro Processor PC U.S. sales will exceed Pentium Processor PCs overall, and when NT will surpass Windows 95 on desktops in large corporations.

### Key Advanced PC Study Findings

- By YE 1997, half said at least 50% of new PC purchases will be Pentium Pros.
- Corporate user plans by late 1997 include the following:
  - 150% increase in Windows NT
  - 50% decrease in Windows 3.X
  - 50% increase in Windows 95
- Within two years, the majority of internal application development will be 32-bit.
- Reliability, security, and performance are top reasons for choosing NT over Windows 95.
- Twenty-five percent of respondents will gradually roll out NT company-wide; 50% will roll out NT selectively.
- Key NT applications are general office, software development, technical/engineering, customized business, and multimedia.
- Performance and speed are top benefits of running NT on Pentium Pro PCs.
- Cost, hardware requirements, and incompatibility with existing software/peripherals key barriers to adoption.

**Why Upgrade to Advanced PCs?**

Corporate PC users are constantly seeking better CPU performance, more memory, faster data access times, and more powerful OS and application suites. In the late 1990s, technology continues to accelerate with more intensive requirements due to the increase in the size of applications and graphics-intensive files; expanded multimedia data types (color images, audio, and full-motion video); the inclusion of more software (Web browsers, utilities); and the constant IT mandates to cut costs and improve productivity. In addition, the tremendous growth in the Internet, Web, and corporate intranets is bringing ever-greater amounts of data to the desktop.

Recent and unprecedented price/performance improvements in advanced PC systems have whetted organizations' appetites. IDC PC pricing research indicates the cost of Pentium Pro systems will decline a full one-third to nearly half (or 33–47%) from the beginning to the end of 1996, depending on chip speed. As an industry example, consider the advanced desktop offerings in late 1994 vs. late 1996 from AST Computer. AST's high-end brand series has dropped in price by more than one-third, from about $4,300 to about $2,850 in estimated street price, while the overall performance offering has more than doubled. In short, there has never been a time in which corporations have needed advanced desktop PCs more, nor a time in which cost justification for upgrading has been stronger for the business enterprise.

**Pentium Pro—Platform for and to the Future**

The Pentium Pro, Intel's sixth generation microprocessor family, released in late 1995, was specifically designed to optimize the performance of 32-bit code while maintaining backward compatibility with previous x86 code. In essence, the chip is a bridge between today's world, which predominantly uses 16-bit OS (Windows 3.X) and applications, and the emerging world of 32-bit OS (NT, Windows 95) and applications, which is fast becoming the industry desktop standard. The Pentium Pro also offers unparalleled speed and performance through its superscalar and superpipeline design; Intel's "Dynamic Execution," and its L2 "cache on-board" dual-chip module.

As prices further decline, IDC predicts that demand for Pentium Pro PCs will increase significantly, especially in the corporate environment. Current street prices for NT/Pentium Pro systems have now fallen to less than $3,000—within the range of most corporate IT budgets. Accelerating price competition and expanded product selection will continue through 1997, which will further fuel the market. IDC anticipates Pentium shipments will peak in 1996, and the Pro, with 15 million units, will surpass Pentium sales (13.9 million units) as the dominant PC platform in the total U.S. market by 1998 (see Figure 1).

**The Corporate Move to Windows NT**

Migration to the 32-bit desktop enables true multitasking, improved stability, virtual memory, multiprocessing, and robustness. More than half (53%) of those IDC surveyed currently do 32-bit application development. Key drivers of 32-bit adoption cited by the IDC user base included new application availability, price declines, performance gains, and the success of NT

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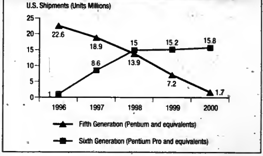
# to Next Generation PCs

Figure 1 – Pentium vs. Pentium Pro Processor Ships



4.0. Within two years, three-quarters of all internal PC application development will be 32-bit.

Again, IDC user research bears out corporate America's preference of Windows NT over Windows 95 or any other OS. Corporate users surveyed included in their 12-month plans a 150% increase in the use of Windows NT. They saw a decrease of Windows 3.X or Windows for Workgroups use by about 50% and an increase of Windows 95 by only 50%. Users cited reliability, security, performance, and robustness, in that order, as the most important reasons for choosing Windows NT over Windows 95. The primary departments driving advanced desktop computer system purchases among IDC respondents are MIS/DP, engineering, and R&D-traditional leading technologists, as might be expected. Somewhat surprising, are the current applications users identified running under NT such as general office automation packages (word processing, e-mail, spreadsheets) or today's general mainstream desktop applications (see Figure 2).

Among corporations polled, the Pentium Pro was also the preferred platform to run NT. Fifty percent of respondents stated that at least half of all their new PC purchases will be Pentium Pro systems by the end of 1997.

**The Call to Action**

The decision of when and how to upgrade an IT infrastructure is difficult and complex. Hesitating can be even more hazardous, possibly leading to forfeited opportunity costs and lost productivity. As we approach 1997, it is clear that the U.S. corporate migration process to NT/Pentium Pro PCs is far beyond initial assessments.

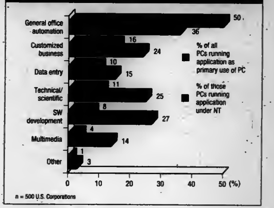
Perhaps the only thing as important as choosing the right advanced PC is choosing the right vendor partner behind it. The top criterion among the survey respondents were price/value and technical support. IDC recommends users to look for PC vendors that push the price performance ratios and offer the most complete total value package. Closely examine what prospective vendors include in:

- Hardware (components, configurations, investment protection);
- Cost of ownership (virus protection, data and system management, real time diagnostics);
- Productivity enhancement (Internet/intranet, utilities);
- Vendor viability;
- Product quality and price/performance.

IDC predicts that 1998 will be the pivotal cross-over year when Pentium Pro outstrips Pentium U.S. sales overall, and NT surpasses Windows 95 on desktops within large corporations.

Given its total value, performance benefits, and headroom, the time for serious consideration of NT is here. The collective experience and insights of 1,500 corporate users—senior IT managers already in upward PC migration, can greatly benefit an organization's information technology design and planning.

Figure 2 – Current PC Applications Share by NT (%)



**This insight was written independently by IDC and sponsored by AST Computer. For a complimentary copy of IDC's full White Paper on migrating to Next Generation PCs (Asian, European or U.S. versions available), please call AST at 1-800-447-0023 x 100 or check the AST Web site at http://www.ast.com**

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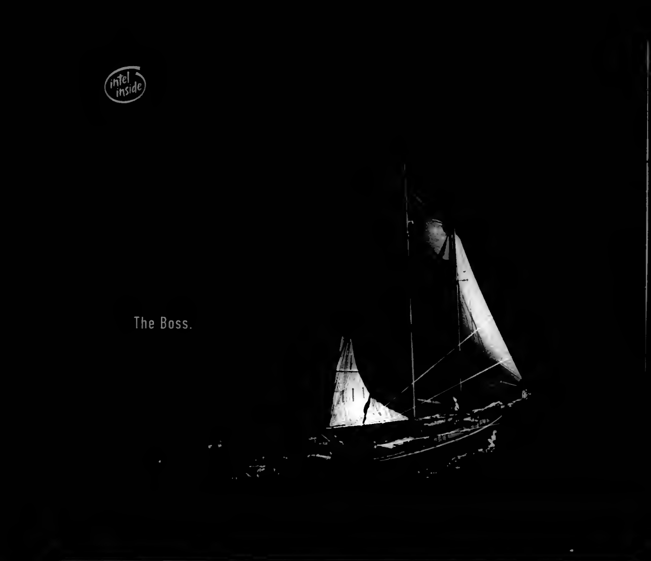

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# Windows 95 pinch

CONTINUED FROM PAGE 55

controlling the desktop boot process in the burgeoning Internet and intranet markets.

Users and especially PC hardware vendors typically don't like to be explicit or vocal in criticizing Microsoft, mostly for fear of reprisal because Microsoft commands a whopping 85% of the desktop operating system market Privately, though, officials at some OEMs said they are working furiously behind the scenes to hammer out mutually beneficial licensing pacts that don't force them to always preload Windows 95.

When it comes to preloading Windows 95, several Fortune 500 shops interviewed by *Computerworld* said they are charting their own migration courses

"No way will we migrate our desktops one minute before we're ready," said Gary Wilkerson, program and external services administrator at Kaiser Foundation Health Plan, Inc. in Atlanta. Wilkerson said the firm's 90,000 users companywide gives it a good deal of leverage when dealing with Microsoft.

Dan Schuffert, senior systems programmer at a large Midwestern paper manufacturer, agreed His company, which has about 40,000 users, has been gradually converting to Windows 95 since the summer About 15% of his users now are on Windows 95; the rest will be upgraded in the next several months. "We've never gotten any nudging from either our hardware OEMs or Microsoft to upgrade," Schuffert said

But although large corporate accounts are insulated from the pressure tactics, midsize and smaller businesses have no such immunity.

An IS manager at a southern manufacturing firm, who requested anonymity, said he was the victim of strong-arm tactics. "My Microsoft sales rep told us in no uncertain terms that if we waited to migrate to Windows 95 that our licensing discount would essentially disappear," the manager said. "There was some room for negotiation — we did stall until this January But with companies our size, they know they've got us over a barrel."

**OPERATING SYSTEMS**

PC manufacturers said they will continue to offer both the legacy Windows 3.x and Windows For Workgroups software along with Windows 95 as long as users request them. These days, though, most systems come preloaded with Windows 95, and few customers are asking for the legacy operating systems.

Bill Collins, a spokesman for Dell Computer Corp. in Austin, Texas, said there is no direction from Microsoft as to whether Dell should load any particular operating systems within the Windows family. But he declined to discuss specific licensing arrangements the company has to preload Windows 95..

### MUM'S THE WORD

The world's No. 1 PC maker, Compaq Computer Corp., will discuss neither its agreements with Microsoft regarding the Windows operating systems nor if it has any preferences when it comes to what it offers its customers. Carl Gulledge, director of marketing for Compaq's OEM sales, said his company encourages OEMs to let users take advantage of what a PC has to offer in a 32-bit environment. That rules out Windows 3.1.

"We are working with our OEMs to find ways to get the value of what they've engineered in their machines, and the best way to do that is with Windows 95," Gulledge said.

What Compaq hasn't done is make pricing an incentive to migrate: It costs more to license a copy of Windows 95 than Windows 3.1, and that won't change any time soon, Gulledge said.

Not that pricing has appeared to matter much. Gulledge said that one year ago, when Windows 95 was introduced, only about 1% of machines leaving OEMs preloaded were for 32-bit environments. In a little more than a year, that percentage has risen to nearly 90%, he said.

For its part, a spokesman for Microsoft said that although Windows 95 is the company's premier operating system, Microsoft continues to let OEMs choose any of the operating systems in the Windows family when preloading desktops.

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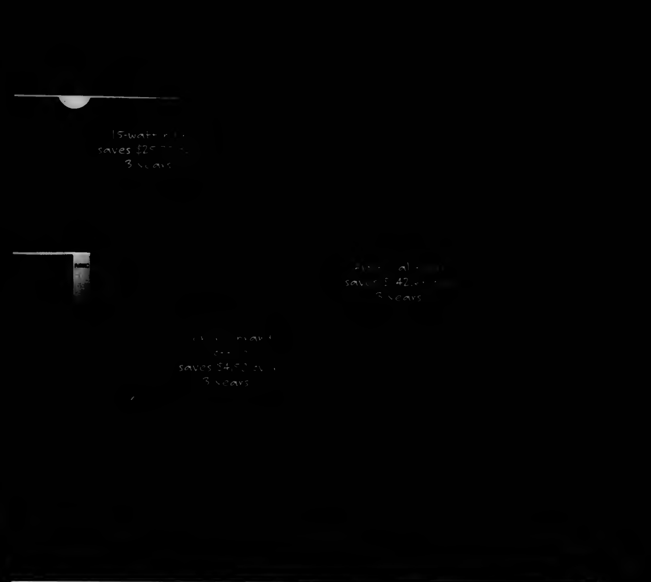

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> "It was like a bleeding artery, and we had to stop the bleeding. We didn't have a clue how to market [high-end] switches direct to large users."
>
> - Paul Richman, chairman of Standard Microsystems Corp., on the sale of its money-losing switching division to Cabletron

# Briefs

## Vines management

Banyan Systems, Inc. in Westboro, Mass., plans to bundle a management utility free of charge with its StreetTalk for Windows NT directory and Vines 7.0 network operating system. Admin ToolBox Lite from NetPro Computing, Inc. in Scottsdale, Ariz., will add server, service and mail management capabilities to the Banyan offerings.

## WAN savings

Ascend Communications, Inc. is shipping NetWarp Pro, a device that lets Integrated Services Digital Network (ISDN) users save on wide-area network charges by using the links to carry telephone calls. Today, many use ISDN lines for data communications and a separate line for voice calls. NetWarp Pro costs $349.

## Bay adds Web support

Bay Networks, Inc. has enhanced its Optivity software for managing its network devices, expanding switch support and enabling access to some reports through the World Wide Web. Now managers can view connections through Bay's Centillion switches and direct switched traffic to a specific port for analysis by an attached probe. Optivity Enterprise 7.1 applications cost $5,995. Optivity Campus 6.1 costs $3,495.

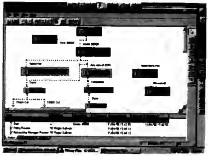
# Exchange workflow gets help from third parties

*By Barb Cole*

THIRD-PARTY SOFTWARE vendors are stepping in to try to satisfy Microsoft Corp. Exchange customers who complain workflow in the messaging server is weak.

Veteran workflow software maker Keyfile Corp. in Nashua, N.H., this week will begin shipping a version of its Keyflow workflow system that is tightly

Exchange, page 77



With Keyfile's Keyflow workflow system, the status of a process can be monitored while it is in progress

- Users leverage freedom to switch vendors

# No loyalty oaths

*By Bob Wallace*

MANY CUSTOMERS like to stick with one internetworking vendor to avoid the pain of switching, but users warn that product failures, broken promises and poor service will push even the most loyal users into the arms of other vendors.

Although long-term relationships with one vendor often net users considerable benefits, including a voice in product development and a sneak peek at unreleased products, many forsake these benefits after getting left in the lurch by their vendors.

**MONEY BACK**

"We had an absolute product failure with an Alantec [Corp.] hub on a Friday and had to have a project up the following Monday," said Barry Gillespie, network services coordinator at St. Jude Children's Hospital in Memphis, a large 3Com Corp. shop. "They couldn't get it fixed in time, so we called our 3Com [value-added reseller], and they bailed us out. We sent the [Alantec] hub back and got our money back."

Gillespie isn't alone.

"I've been trying to get an [Asynchronous Transfer Mode] module for my Cisco [Systems, Inc.] router to work for close to a year and finally put it to them, point blank, that I want my money back," said Bill Horst, chief at the General Services Ad-

No loyalty, page 75

**CAUSES OF LOST LOYALTY TO VENDORS**

1. Poor financial performance
2. Management changes/restructurings
3. Broken promises
4. Poor servica/support
5. Unreliable distributors

# Security upped in Novell server

▸ *NetWare Web Server 3.0 beta demonstrated at Internet World*

*By Laura DiDio*

IN A BID TO boost its presence in the Internet/intranet markets, Novell, Inc. made a series of announcements at last week's Internet World '96 trade show in New York. Novell's centerpiece was a demonstration of the beta version of NetWare Web Server 3.0, due in January.

And as a part of its effort to provide customers preview versions of forthcoming products, Novell also delivered a cached Hypertext Markup Language (HTML) package that will let users more quickly access Internet and intranet document pages.

Novell has buttressed NetWare Web Server 3.0 with its own advanced Secure Sockets Layer level security that encrypts Internet and intranet data transmissions.

Also new in the latest Web Server is a process for authenticating intranet clients in NetWare's Novell Directory Service (NDS), which lets network administrators replicate the rights and access privileges of all users on a network. That means if a user is banned from a particular World Wide Web site, that information will be replicated throughout the directory; network administrators have to key in the information only once.

"That's an incredibly efficient mechanism and a big timesaver," said Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston.

Matt Dillon, network specialist at ITT Fluid Technology Corp. in Morton Grove, Ill., said that type of efficiency is essential for his company's end users.

Novell, page 79

**THE FINAL VERSION**

NetWare Web Server 3.0 will be available in the first quarter of 1997. Its features will include:

- Secure Sockets Layer 3.0 encryption between Web servers and browsers
- Virtual directories for simplified management
- Increased performance
- Connectivity to Oracle databases
- Novell QuickFinder search engine for indexing intranet files

# SAS enhances tool for eyeing performance

*By Patrick Dryden*

SEEKING TO CATCH up with users' demands for client/server and intranet support, SAS Institute, Inc. last week enhanced its tools for examining the performance of systems and networks.

The developer of analytical business applications is revamping an SAS-language data warehouse and reporting suite called Computer Performance Evaluation (CPE).

Now called IT Service Vision, the package reduces the need for multiple SAS products and expertise in the SAS report-

SAS tool, page 73

> "Now I can download performance data to a PC."
>
> - Susan Fassette
> Erie Insurance

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# SAS tool examines performance

CONTINUED FROM PAGE 69

generation language. It splits the data warehouse between mainframe and Unix systems and enables simpler reporting through PC clients and World Wide Web browsers.

The product was designed to gather information from diverse sources, store it and present it in meaningful ways. This is much the same way the vendor's job-specific data warehouses help corporations understand the performance of their business processes.

For example, administrators can quickly check service levels for their users, analyze the current impact and project the future needs of applications. Or they can predict performance trends based on historical baseline data.

"The new package looks very helpful, since we have many field technicians without experience in the SAS language and tools," said Ken Tyler, principal network consultant at Bell Atlantic Network Integration, Inc. (BANI) in Frazer, Pa. "Now I don't have to convert utilization and capacity analysis for them. They can access reports anywhere from a browser."

For the past two years, Tyler has used SAS' CPE to collect performance data from network management platforms and devices throughout BANI customer networks, archive it and create understandable custom reports — describing routers by location instead of IP address, for example

### EASIER TO USE

With IT Service Vision, BANI technicians won't need such a strong background in the SAS language and tools, Tyler said. He said he likes the PC client's graphical user interface for creating reports and presenting them in Hypertext Markup Language format for Web access.

Canned reports on network performance analysis are available from other vendors, Tyler said. "But the SAS language capability lets us wrap more user-meaningful info into our reports," he added.

**CAPACITY PLANNING**

Mainframe performance evaluation is the focus for Erie Insurance Group, a SAS CPE user in Erie, Pa.

The biggest boon in the revamped package is the desktop reporting, said Susan Fassette, senior performance management specialist at the insurer. "Instead of looking at separate sets of tabular data on the mainframe, I can build graphical reports on a PC with simple drill-down capability," she said.

For example, Fassette can graphically report average CPU utilization for the day and then let staffers dig down to examine statistics by shift, hour or 15-minute period.

The custom reporting capabilities common to the old and new tool kits help Hudson Williams, Inc. answer complex performance and operations questions for managers of open systems and networks, said Nell Cote, president of the New York integrator.

"They've opened the architecture to include the Web, phone systems and nonstandard devices," Cote said.

IT Service Vision is available from SAS in Cary, N.C. Pricing starts at $65,000 for the first year for mainframes and $32,000 for distributed Unix systems.

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# Allies line up for 56K bit modem standards

*By James Niccolai*

FOUR LEADING PC manufacturers have announced support for an effort by Lucent Technologies, Inc. and Rockwell Semiconductor Systems to establish a common technical standard for 56K bit/sec. analog modems.

AST Computer, Inc., Compaq Computer Corp., Hewlett-Packard Co. and Toshiba Corp. said they will support K56Flex, the protocol proposed last month by Rockwell and Lucent that will interoperate between their respective V.flex2 and K56Plus modem technologies.

The 56K bit/sec. modems, expected to ship early next year, will almost double the rate at which data can be transferred over standard telephone lines.

But a battle to establish a common standard has emerged, with Lucent and Rockwell soliciting support for their K56Flex technology and U.S. Robotics Corp. pushing its x2 technology.

In the past two weeks, Hitachi Ltd. and Dell Computer Corp. have announced support for the U.S. Robotics standard.

*Niccolai writes for the IDG News Service in Boston.*

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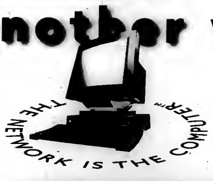
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# No loyalty

CONTINUED FROM PAGE 69

ministration's communications branch in Philadelphia. "They didn't like that, and I haven't heard from them in the weeks since. I've decided I'm going to go with the Bay Networks solution instead."

But users may pay a price for changing vendors. That could include the cost of retraining staff, new network management systems and intangibles such as breaking in sales representatives and engineers and building relationships with vendor executives.

When it comes to service and support, some would rather stay loyal than switch and pay a premium for better service.

"We're willing to pay extra for a higher level of service and support from our current vendors," said Peter Madams, a vice president at PictureTalk, Inc., a conferencing software vendor in Pleasanton, Calif. But he said he won't tolerate broken promises made by vendors.

"We've had a [supplier] miss promised product delivery dates altogether, which is the worst type of problem for us because the cost of tying up staff is far more expensive than the cost of networking hardware," Madams said. "When this happens, we simply change suppliers."

> "I . . . finally put it to [Cisco], point blank, that I want my money back."
>
> — Bill Horst
> General Services Administration

Continued poor financial performance and senior management changes are another reason to reconsider even long-running relationships, said Madams, who uses 3Com and Cisco products.

"We wouldn't want to buy equipment from a vendor if we think they're going out of business," he said. "We look closely at vendor performance, and it definitely affects who we go with and who we stay with."

With the acquisition and merger tsunami that leveled the internetworking industry this year, Gillespie would like to see sales representatives and sales engineers that have a knowledge of their company's increasingly broad product lines.

"It's a real catch-22," Gillespie said. "You want these people to know their entire product lines. With all the industry consolidation, these people are frequently in training. So you need them to be able to back up each other. And it's just not enough for them to be knowledgeable on routers alone if their company sells routers, hubs, switches and network interface cards."

### FOUR WAYS TO INTEGRATE E-MAIL SYSTEMS

| Strategy | Pros | Cons |
|---|---|---|
| Point-to-point gateways | ▮ Requires no changes to client or post office<br>▮ Inexpensive | ▮ Unreliable<br>▮ Hard to manage |
| Message switch | ▮ Can connect multiple E-mail systems<br>▮ Provides central point for directory synchronization | ▮ Expensive<br>▮ Long deployment time |
| Client drivers | ▮ Tightly integrated with E-mail<br>▮ Inexpensive client | ▮ Can be hard to manage<br>▮ May not support all client functions |
| Standards-based backbones | ▮ No lock-in to a particular E-mail product<br>▮ Enables migration toward a standards-based environment | ▮ Lack of support for some proprietary E-mail client functions<br>▮ Still developing protocols for directory synchronization |

Source: Patricia Seybold Group, Boston

Gives PC users
severe cases of
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COMPUTER ASSOCIATES

# New CA-Unicenter TNG

# Exchange workflow aided by third parties

CONTINUED FROM PAGE 69

integrated with Exchange. Using either the Keyflow development environment or prebuilt templates, users can build workflow routines that use existing Exchange functions for key application services.

Other workflow specialists, including Reach Software, Inc., Ultimus and FileNet Corp., have also released products in the past few months designed to run on top of Exchange.

Using the underlying messaging infrastructure to route workflow documents is cost-effective and lets companies share the corporate knowledge locked in the messaging system's discussion databases.

For companies that have decided to standardize on Exchange for messaging, those workflow add-ons bolster a key weakness of the messaging server, users said.

"Other than doing some really ugly stuff with Visual Basic, Exchange does not natively have the capability to route forms or do workflow," said Dave Livingston, Exchange architect at Norwest Services, Inc., the information systems division of Norwest Financial in Minneapolis. Norwest is testing Exchange with 600 users and expects to deploy it across the bank.

Exchange falls short of Norwest's workflow demands because it doesn't offer flexible forms that may be easily knitted together to form workflow routines, Livingston said. But the Exchange "server is a good platform on which to run workflow applications," he added.

A product such as Keyflow is very attractive to Exchange shops, said Chalmers Brown, a consultant at Adler Consulting Group in New York. "Coropanies can take advantage of the flexibility of developing workflow apps with Keyflow's easy-to-use tool and still leverage that Exchange backbone," he said.

Nikki Gomez, manager of software services at Standard & Poors in New York, said any workflow application the financial services company installs has to work well with Exchange. The company is moving 1,500 users to Exchange and evaluating Keyflow.

Gomez said Keyflow caught his eye because of its integration with Exchange. Keyflow workflow forms are registered with an Exchange server, and workflow objects are stored in Exchange folders. Keyflow also uses the Exchange mail directory services.

Gomez said he considered Notes, which has more evolved workflow support than Exchange. But he said Exchange and the workflow add-ons fit in better with the company's Microsoft-centric computing environment.

### A WORK IN PROGRESS

Microsoft has positioned the server as a platform to serve up workflow applications since it began shipping Exchange last April, but so far it has delivered little.

Microsoft will add collaborative features to Exchange in its soon-to-be-released Outlook client, which will enable users to generate forms and route them to others throughout an organization.

Microsoft later this year is expected to publish a set of workflow application programming interfaces for Exchange that will make it easier for software vendors to integrate their workflow offerings with Exchange.

Pricing for Keyflow is $295 per client and $3,470 for a server and five-client license.

## Ten trends affecting the workflow market

1. Business process re-engineering
2. Move to standards-based software
3. Integration of imaging capabilities with applications
4. Ubiquitous computers
5. Desire for paperless offices
6. Migration to client/server
7. Growing popularity of optical character recognition
8. Low software prices
9. Vendor consolidation
10. Improved connectivity between workflow systems

Source: Association for Information and Image Management, Silver Spring, Md.

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POSTSCRIPT

# Notes' remote access improved

*By Barb Cole*

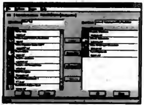
XcelleNet, Inc. is readying software that improves the remote access capabilities of Notes by making its replication facility more efficient.

RemoteWare Essentials for Lotus Notes, can significantly reduce connection times for remote workers who use Notes, users said.

"Some connections went from over an hour down to eight or 10 minutes," said Dan Barth, a vice president and chief information officer at Pinnacle Brands, Inc., a sports trading card company in Dallas. Pinnacle has rolled out the RemoteWare utility to its remote sales force.

As many as 25% of Notes users access the software from remote locations via dial-up connections, analysts said. Although Notes' built-in replication has been a boon for users, replication sessions can be tedious.

"With Notes, the process of replicating occurs online and can be very time-consuming," said Karen Scherberger, research director at Gartner Group, Inc. in Stamford, Conn.



**With RemoteWare Essentials, systems administrators can schedule automatic replication for remote workers**

### DATA COMPRESSION

The RemoteWare Essentials utility improves throughput by compressing data to be replicated. It also detects and applies some changes in the source and replica databases off-line.

Barth said RemoteWare Essentials lets sales workers download more information, thus making them more equipped for the job.

"In one call, they can replicate their Notes databases, plus download key sales analysis information from our [online analytical processing] application," he said.

With RemoteWare Essentials for Lotus Notes, users may interact with a familiar Notes interface or a World Wide Web browser. The firm is working on a similar utility that will let users view Web pages off-line.

XcelleNet, in Atlanta, will ship RemoteWare Essentials for Lotus Notes next month. It costs $75 per user and $3,750 for 50 users.

# Novell

CONTINUED FROM PAGE 69

"The Novell Web Server 3.0 ensures us of a high degree of security, and our network administrator finds it extremely easy to use," Dillon said.

Another key feature in the upcoming NetWare Web Server 3.0 is an indexing technology that lets administrators index the contents of a Web server or any LAN file server. That lets users and administrators do keyword and/or string searches for specific content anywhere on the corporate intranet or Internet.

NetWare Web Server 3.0 beta software can be downloaded for free from Novell's Web site at www.novell.com. Customers can register for the software at support.novell.com/home/pubbeta/nws. The final version of the Web server software will be available in the first quarter next year.

Novell also used last week's Internet World trade show to release several test software packages. The Proxy caching gives users faster access to HTML pages by storing frequently used pages in a local-area proxy cache such as a NetWare or IntranetWare file server. HTML pages are stored and updated based on frequency of use and file size.

Novell also released the following test software packages:

- Security services to provide users with a firewall-class security framework. The security software is fully integrated with NDS to ensure that data transmissions are immune from unauthorized access.
- Virtual Private Networking services that work with IntranetWare's wide-area network routing options such as Point-to-Point Protocol over leased lines, Integrated Services Digital Network, frame relay and X.25. This ensures that data will be encrypted throughout the network.
- Remote Access Service to give users remote dial-in and dial-out capabilities to access corporate intranets.
- The Z-File Services storage system to deliver a scalable, portable back-up storage system that supports the current NetWare file system and Web services.

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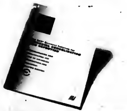

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# NetSuite smartens up its net software

*By Patrick Dryden*

NETSUITE DEVELOPMENT last week overhauled its namesake network design and documentation software in an attempt to simplify the process of representing the constantly changing components and connections on a network.

New functions and optional tools in Version 2.0 of NetSuite Advanced Professional Design address problems that early users said made the software cumbersome and created network-planning roadblocks. The new version helps users keep updated as devices are added to their networks, said beta-tester John Dunning, network systems specialist at Wayne State College in Wayne, Neb.

Such packages from NetSuite Development and other vendors combine drawing software with intelligent analysis tools to examine the new or modified layouts. As the user records information such as each device's location, serial number and other support details in an inventory database, the tool looks up vendor-supplied specifications in a library. Then it validates the design by making sure the device supports the desired connection and topology.

> This is the one place we can keep an accurate network map and up-to-date information
> – John Dunning
> Wayne State College

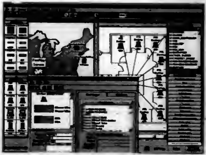
These vendors target planners and managers who currently diagram a network with drawing software and hope that their connections are accurate. They also target those who separately log inventory information in notebooks or spreadsheets.

"But NetSuite's technical accuracy made the tool hard to use when my changes weren't included yet in the device library," Dunning said. "But now that's 100% resolved."

New options let users temporarily halt live testing of a network design to allow planners to sketch a design in "whiteboard mode." The planners can then globally transform one type of device into another to signify equipment that has been upgraded or replaced. Previous versions required manual changes networkwide or halted the design because the library didn't recognize a new device.

### RIGHT TOOL FOR THE JOB

An optional tool kit helps customers model new items, such as a hub or switch that isn't listed in NetSuite's library of 3,000 devices. Managers also can present diagrams and details as hyperlinked documents for remote viewing from any World Wide Web browser.



**NetSuite Advanced Professional Design 2.0 combines drawing and analysis tools**

NetSuite Development in Wayland, Mass., now has competition from newcomers that include ImageNet, Inc. in Wellesley, Mass., and Network Tools, Inc. in Santa Clara, Calif.

The potential market is huge. Less than one quarter of corporate networking departments feel they maintain an accurate record of their networks, according to Yankee Group, Inc. in Boston.

"So far, tools to design and document the current state of a network have been nichey and impractical," said Rick Villars, an analyst at International Data Corp. in Framingham, Mass. Now these firms can help depict corporate networks without too much customization, he said.

NetSuite Advanced Professional Design 2.0 costs $2,500. The optional tool kit costs $1,000.

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# Briefs

**Managing documents**

Information Dimensions, Inc. in Dublin, Ohio, is shipping Basis Version 8.0, an upgrade of its document management system that now supports very large databases. The feature lets companies manage collections of documents that contain terabytes of information, according to the company. The new version also has an enhanced search engine and version control features. The software runs on Windows NT and Unix servers. Pricing starts at $22,000.

**Unified billing**

Ameritech Corp. recently signed a multimillion-dollar contract with Saville Systems in Burlington, Mass., for a new billing system that will help combine customers' long-distance, local, cellular and paging services on one monthly invoice.

# MFS plans nationwide rollout of high-speed line

*By Kim Girard*

MFS COMMUNICATIONS will soon begin a national deployment of high-speed Digital Subscriber Line (DSL) service to business customers who seek Internet access and remote connections.

The service, called IDSL, is a hybrid of Integrated Services Digital Network (ISDN) and DSL developed by MFS and Ascend Communications, Inc. in Alameda, Calif.

Using IDSL, data can be carried on standard phone lines at 28.8K to 128K bit/sec. speeds.

Unlike ISDN, ISDL is a dedicated service that targets users who stay on the Internet for long time periods. Because it is a dedicated connection, users will pay a flat fee rather than a per-minute charge typical of ISDN. ISDL requires an ISDN terminal adapter on the customer end. ISDN users can use their ISDN terminal adapter to upgrade to the new IDSL service.

MFS, the telecommunications carrier in Omaha that owns UUnet Technologies, Inc.'s Internet backbone, will initially introduce the service in California. The company plans to make IDSL available nationwide by the third quarter of next year; pricing hasn't been announced. The service promises home or remote users faster access to the Internet and corporate LANs.

ISDL service should be far less complicated to install at both the customer and carrier site than ISDN, said Michael Malaga, director of strategic development at MFS. Once a terminal adapter is installed at the customer's end, traffic will travel from that site to the carrier's central office to the Internet. But several ISDN users said DSL could suffer the same pricing, installation and availability issues that have plagued ISDN.

"If DSL has the same problems, it will have the same resistance that ISDN has had," said Tom Lang, an IS manager for Los Angeles County, who works in Downey, Calif.

**The skinny on IDSL**

- →It is a hybrid of ISDN and DSL.
- →IDSL service works on copper phone lines. Data travels from the user's location to the carrier's central office, where it is handled by an Ascend remote access switch. The traffic moves from the central office to a frame-relay network to the Internet.
- →Users need an ISDN terminal adapter ($800 to $1,200).

### TOO FAR TO GO

Lang, an ISDN user, said he believes all DSL technologies will find a niche, depending on how they are priced and marketed, but he appreciates ISDN's versatility. Unlike an ISDL connection, his ISDN lines carry both voice and data, he said.

Carriers also may need to invest lots of cash to recondition some telephone lines to carry data at promised speeds.

The service could bridge the gap for users who want speeds faster than the soon-to-be-available 56K bit/sec. modem but don't want to invest in a dedicated T1 line.

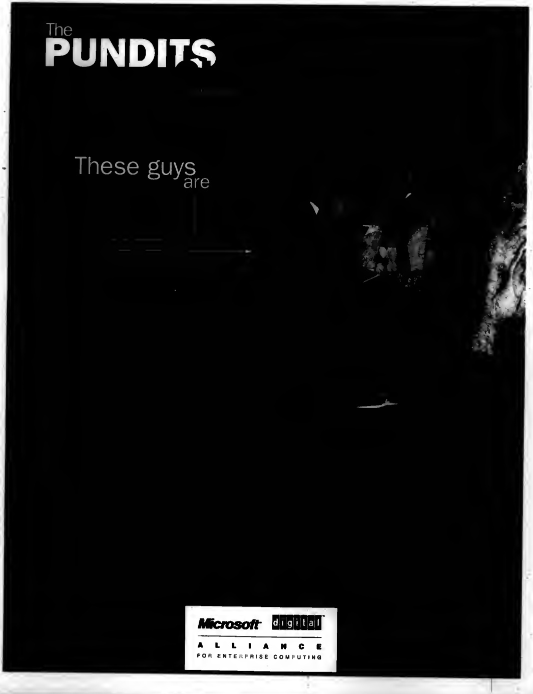
IDSL is appealing partly because it promises to relieve congestion on public telephone network switches that regional Bell operating companies claim is causing service problems. ISDL redirects that traffic across lines maintained by Internet service providers.

Malaga said the firm doesn't plan to deploy Asymmetric Digital Subscriber Line technology because it doesn't offer the same speeds to and from the Internet or corporate network — a drawback for business users who communicate with the home office. IDSL provides the same speed both ways.

It's like we mixed some dilithium crystals in with the silicon

THE NETWORK IS THE COMPUTER

Sun


The
PUNDITS
These guys are
Microsoft digital
ALLIANCE
FOR ENTERPRISE COMPUTING

• Administrators tighten control

# Firewalls close in on network users

*By Charles Babcock*

FIREWALLS STARTED OUT as imposing, costly sentinels at the perimeter of the enterprise, but lately they have been getting less expensive and moving inside, closer to the end user.

That is necessary, from the point of view of network administrators who are worried that end users will find "backdoor" access to the Internet by dialing in to service providers using modems at their desks rather than going through the corporate firewall, observers said.

### MORE TO COME

That and other concerns will be met by building more firewalls in the network infrastructure. They will one day be little more than "a bump in the wire," predicted Marcus Ranum, chief scientist at V One Corp., a firewall builder in Rockville, Md. Ranum was a speaker on the state of the art of firewalls at the 23rd Annual Computer Security Conference in Chicago in November.

**INTERNET ACCESS**

McAfee Associates, Inc. in Santa Clara, Calif., a month ago launched PC Firewall, which can be installed on any Windows computer. In its current version, it is basically a stand-alone desktop product, but Version 2.0, due next month, will let a network administrator restrict incoming or outgoing traffic on PCs from a central Windows NT server. The firewall will cost $47 per unit for 100 units or $79 per individual copy.

Ascend Communications, Inc. in Alameda, Calif., recently offered to ship its low-end Pipeline routers with a firewall built in as a $500 option. Enterprise firewalls typically cost $12,000 to $15,000. Without a firewall, Ascend's low-end Internet access routers cost $895 to $995. The routers connect remote workers to the Internet over an Integrated Services Digital Network (ISDN) line, with the firewall protecting them from attackers.

Applied Cybernetics, Inc., an Internet consulting firm in Columbus, Ohio, last year replaced its general-purpose firewalls with Ascend's Pipeline 50 routers. Michael Hullhorst, senior systems architect, said the Pipeline firewalls are much easier to configure through a point-and-click Windows application, and a technically skilled secretary serves as systems manager after setup.

Hullhorst said his firm supplies Internet access to some of its clients and uses four Pipeline 50s to shield traffic of one company from that of others. The small units scale to Cybernetics' needs as it adds ISDN lines to clients. "It's a much more versatile solution overall," Hullhorst said.

Rik Farrow, an independent firewall consultant, said the Ascend products provide "a more rigorous set of rules" for protecting the home or regional office than was available through packet-switched routers.

At the same time, Ascend's Secure Access and McAfee's PC Firewall offer less protection than enterprise firewalls from such providers as Border Network Technologies, Inc. in Toronto and Checkpoint Technologies Ltd. in Redwood City, Calif., said Farrow, an instructor on firewalls for the Computer Security Institute in San Francisco. The latter can screen traffic to and from particular applications, such as electronic mail, whereas Secure Access and PC Firewall use less precise screening rules.

## Snapshot

**CARRIER RIVALRIES**

**The pluses and minuses of local telecommunications competition**

| Pluses | |
|---|---|
| Falling prices | 84% |
| Improved service quality | 28% |
| Faster rollout of new technologies | 18% |
| More carriers to choose from | 18% |

| Minuses | |
|---|---|
| Nothing comes to mind | 36% |
| Managerial nightmare | 20% |
| Reduction in service quality | 18% |

From a survey of 50 Fortune 1,000 companies; multiple responses allowed

Source: Forrester Research, Inc.

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THE NETWORK IS THE COMPUTER

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THE NETWORK IS THE COMPUTER

# Briefs

## Adults using the Internet and online services

| May 1996 | |
|---|---|
| Home | 10.3 million |
| Work/school | 17 million |

| September 1996 | |
|---|---|
| Home | 10.3 million |
| Work/school | 23 million |

Source: Inteco Corp., Norwalk, Conn.

### Forms for commerce

Premenos Corp. in Concord, Calif., last week introduced a pair of software products designed to deliver electronic data interchange (EDI) over proprietary or private networks, or the Internet.

Templar PowerDox and Templar WebDox shield end users from the complexities of EDI with a forms-driven graphical user interface. PowerDox for MVS is available now. It costs $40,000. The Windows NT version is scheduled to be available by March and will cost $25,000. WebDox is the Internet version of PowerDox. It will be available by March and will cost $25,000. WebDox and PowerDox require remote software, which costs $499 per copy.

### Web mail

Ipswitch, Inc. in Lexington, Mass., has rolled out an add-on that provides World Wide Web browser access to its IMail Internet mail server for Windows NT. The Web Messaging module is available now and costs $195.

### Appliance applications

Navio Communications, Inc., a start-up in Sunnyvale, Calif., will develop applications for Internet appliances. The company's first offering, Navio Mail, is a Java-based mail client that will enable users to send audio, graphics, images and Java applets in the body of messages. Navio Mail is due in the first quarter next year, company officials said.

# Playing tag with HTML rules

▸ *Users want standards, compatibility*

*By Justin Hibbard*

GETTING INTERNET browser vendors to stick to HTML standards is like getting jazz musicians to stick to sheet music.

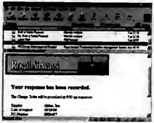
Just ask information systems managers preparing for the beta releases of Netscape Communications Corp.'s Navigator 4.0 and Microsoft Corp.'s Internet Explorer 4.0. The two vendors' past failures to reconcile Hypertext Markup Language (HTML) support in their browsers has led to incompatible documents on corporate intranets, IS managers said.

"We used to have a lot of issues with [Internet Explorer] 2.0," said Joel Forsythe, a systems consultant at Tribune Media Services, Inc. in Chicago. "It was mainly the layout. The pages would look different in the two browsers."

Tribune Media has standardized on Navigator. But inevitably, some business units use Internet Explorer because it is free and readily available, Forsythe said. Other IS managers at large companies reported similar renegade browser use.

"In a company the size of Boeing, you can't possibly tell people what to do," said Joe Meadows, World Wide Web proxy service product manager at The Boeing Co. in Seattle. Boeing has a site license for Navigator, but some employees use Internet Explorer and other browsers, Meadows said.

Adding to the problem is the fact that Boeing's intranet content is created by a different author in each department, Meadows said. "We tell them HTML 2.0 is the only thing everybody can render reasonably well," he said, "but people are going ahead with most of the stuff in [HTML] 3.2 — frames and tables."


Your response has been recorded.

Layout-conscious users want standards so Web pages look the same in different browsers

Features such as frames and tables have caused fewer problems since Microsoft began supporting them in Internet Explorer 3.0, Meadows said. But he said he would avoid using new formatting features in the beta versions of Navigator 4.0 and Internet Explorer 4.0 until the features are standardized.

Navigator, due next month, and Internet Explorer, due this month, will adhere to the latest HTML specification approved by the Internet Engineering

Playing tag, page 88

With SWAT service, users can pay $5 to have a virus removed, or they can terminate the session and pay nothing

# SWAT battles viruses

▸ *Online antivirus firm charges only for removal*

*By Gary H. Anthes*

IMAGINE GOING to the doctor for a physical and paying him nothing unless he finds something wrong with you — and then only if he cures you.

That's the approach taken by the Secure Web Anti-Virus Technology (SWAT), a virus-scanning service offered by Seven Locks Software, Inc. in Bethesda, Md.

Users can access the service free by downloading SWAT software from www.sevenlocks.com. When executed, the software scans a Windows 95 PC's files for viruses. If none is found, the process ends, and the user pays Seven-Locks nothing.

If a virus is found, the user may terminate the session or request that SWAT clean the PC with its virus-removal software. Seven Locks charges $5, via a credit-card number entered online, to remove a virus.

The service might be deployed by a company that wished to avoid the costs and ad-

SWAT, page 88

# Third parties link 'net to PeopleSoft

*By Randy Weston*

PEOPLESOFT, INC. may not be quite ready to take its business applications to the World Wide Web, but plenty of companies are lined up to do the job for it.

PeopleSoft over the next few months will slowly roll out Version 6 of its business applications package.

Missing from the release, however, are any built-in Internet interfaces, features PeopleSoft competitors already have available or are preparing to release. Out-of-the-package Internet applications won't be available from PeopleSoft until the end of next year in Release 7.

The interfaces will let firms give casual users access to previously inaccessible functions of large packaged applications through a Web browser. The interfaces make possible items such as self-service human resources applications in which employees can use a Web browser to update personnel data such as address changes.

Third parties, page 88

John Curran

# Internet reliability

**BBN Planet is one of the dozen or so largest Internet service providers in the U.S. The company, which focuses exclusively on business, government and academic users, has 2,300 customers nationwide. Its parent company, BBN Corp., was instrumental in the founding of the Internet more than 25 years ago.**

**As chief technology officer at BBN Planet, John Curran sets the company's strategic direction. He recently spoke with Computerworld senior editor Mitch Wagner in his Cambridge, Mass., office about Internet reliability and standards and competition among service providers.**

Internet, page 88

# SWAT battles viruses online

CONTINUED FROM PAGE 87

ministrative headaches of maintaining antivirus software on all its desktops.

"It's a pretty cool idea; I don't think anyone has thought of that before," said Jonathan Wheat, manager of the Anti-Virus Laboratory at the National Computer Security Association (NCSA) in Carlisle, Pa. Wheat said the service would appeal especially to home users who didn't want to pay $50 or more for an antivirus product.

**ANTIVIRUS SOFTWARE**

### CHECKING VISITORS

But Larry Mayer, an independent financial consultant in Arlington, Va., said SWAT might be used by a company on its intranet Web server to protect internal users. "When anyone touched the Web site, it would go off and see if that user had run the antivirus program within, say, the last week," he said.

If the user hadn't, a script could direct the Web server to scan the user's PC with SWAT, Mayer said.

David J. Stang, president of Seven Locks, said the company would work out an agreement with any company that wanted to run the software on an intranet server to offer its own SWAT service.

Peter Tippett, president of the NCSA, said the fact that the downloaded SWAT scanner always contains the latest updates offers a "pretty compelling" benefit.

Tippett said that in most large companies, a two-month delay is typical between the time a vendor updates its antivirus product and its installation on end-user machines. That time could, at least in theory, be greatly shortened with SWAT, he said.

Michael Cob, president of CobWeb Applications in Surrey, U.K., said he will use SWAT between once per day and once per week depending on how often he loads files onto his four PCs.

Cob said SWAT found and removed viruses on his PCs, which he infected specifically as a test

### VIRUS CAPTURE

If SWAT encounters a virus that it isn't yet programmed to remove, it automatically captures the virus and sends it to Seven Locks' laboratory for analysis

At no charge, the company will develop removal software and send it to the user by electronic mail, usually within 24 hours, Stang said.

The software that scans for viruses and the software that removes them are both included in the SWAT package that is initially downloaded, with the removal software only activated when the user agrees to pay.

# Internet reliability and standards

CONTINUED FROM PAGE 87

*Curran leads design activities for BBN Planet's network and service infrastructure with a particular emphasis on scaling, management and security issues.*

**CW: Is it inevitable that a company such as BBN would be bought or put out of business by a telephone company one day?**

**CURRAN:** Consolidation presumes that everyone is working or aiming toward the same industry. But the Internet business is about computer-to-computer communications. And that's a very different business from the communications world, which is about copper, trenching, backhoes [and] wire.

When you take a look at what most of the customers are ordering for Internet services these days — sure, down at the bottom there's a form of wire — but most of the services people are looking at now are not communications services. They're computing services. It's Web hosting, it's security services, it's the mail, the news, the [Domain Name Service] and the support infrastructure that goes into the Internet service.

Customers want to get new technologies three months to six months after they're stabilized. The software development community looks at that and says, "Sure, that's simple." But for a service industry, where the average deployment cycle for a new service or switch is measured in years, that's a big challenge.

**CW: What would have to happen for Internet traffic to become as reliable as phones or faxes or overnight package delivery?**

**CURRAN:** We don't offer interprovider guarantees now because you need enough providers to make that work.

You can't honestly expect an Internet service provider to warrant the performance of their competitor until all the providers step up to a certain level of service and we can do the necessary agreements among providers.

It's hard enough for me to offer guarantees on my own network. I'm not going to offer guarantees on a network that doesn't have a performance guarantee for its own customers.

Actually, I think the best way to solve congestion problems is a much stronger user community which votes with its dollars and insists on reliable service and moves to providers that provide it.

**CW: Is it becoming more or less difficult for multiple vendors to work together?**

**CURRAN:** You have higher levels of cooperation among the service providers, particularly the larger service providers carrying a lot of the traffic, than we had in the past.

But the fact that there is a high level of cooperation doesn't mean there's a high level of knowledge. As acquisitions occur and as you have new companies entering the market, they don't necessarily have the track record or the experience.

I think we end up with the problems getting solved. We've just managed to spread the important technical dialogue out through a much longer period of meetings.

The good news is that at least people are talking. You don't have Internet providers hiding in the darkness, not communicating with anyone.

That would be a problem. Because the Internet is changing so fast, everyone has to get informed of a change coming down and respond within months. That means that you can't have an Internet provider marching to the beat of a different drummer. It just won't work.

**HELPING HANDS**

[illegible]

| Vendor/Product | Function | Price |
|---|---|---|
| Lotus/ Domino | Messaging middleware with tools for building Web applications and some built-in PeopleSoft templates | Starts at $995 |
| OneWave/ Extension for PeopleSoft | Web server with built-in templates for PeopleSoft applications | $50,000 plus $25 per user |
| NetDynamics/ NetDynamics 3 | Web server, application and development tool | Single-user application server starts at $1,295 |

# Third parties link PeopleSoft

CONTINUED FROM PAGE 87

So the Pleasanton, Calif.-based PeopleSoft cut deals with several third-party vendors to develop Web browser interfaces for its line of enterprisewide applications.

Among the companies that offer such products for PeopleSoft applications are Lotus Development Corp., NetDynamics, Inc. and OneWave, Inc., all of which were demonstrating their goods at PeopleSoft's recent user group conference.

Analysts predicted PeopleSoft won't be hurt by being late to market. The company, which started as a human-resources application vendor and only recently ventured into financials and manufacturing, has thrived as a come-from-behind player.

"This functionality is very definitely appealing to today's buyers," said Judy Hodges, packaged applications analyst at International Data Corp. in Framingham, Mass. "But the acquisition of these types of applications will really take hold throughout the next two years. Companies are still developing their strategic plans for the Internet, so it won't immediately hurt PeopleSoft."

Some users said PeopleSoft need not hurry at all because the third-party fixes give them more functionality than they could get with an integrated product from PeopleSoft itself.

### DOMINO THEORY

Domino has allowed Osram Sylvania, Inc., in Danvers, Mass. to move beyond simply building Web interfaces so employees can access their personnel files, said Roger Rudenstein, project manager of human resources information systems at the company.

The maker of light bulbs and other products uses Lotus' new Internet-ready Notes product, Domino, as the interface for PeopleSoft functions.

"Yes, it allows us to get out to the Web, but it also allows us to build more robust applications to the Web," Rudenstein said. "We have workflow going on over the Web and in production so people can set off a whole process from a browser. A line manager can now ask for a head count though the Web. It's much more than enabling a form. It helps us organize even our static pages."

# Playing tag with HTML rules

CONTINUED FROM PAGE 87

Task Force, according to Netscape and Microsoft. But Netscape has already announced that its browser will support at least one new proprietary HTML tag, a unit of code that formats text and graphics on a Web page. And Microsoft has left open the possibility of doing the same.

The new Netscape tag, <LAYER>, will let developers position graphics on a page according to precise X and Y coordinates. It will also let developers layer multiple images and HTML documents over one another inside a browser window.

Microsoft intends to offer the same features but will wait for the World Wide Web Consortium to recommend standards for producing the effects.

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# Corporate Strategies

Case Studies • Trends • Outsourcing

## Briefs

### E-cash cards

Seven banks and credit-card companies have teamed up to commercially develop electronic cash cards for U.S. markets. The seven — the Chase Manhattan Bank Corp., MasterCard International, Inc., Wells Fargo Bank, First Chicago NBD, AT&T Universal Card Services, Michigan National Bank and Dean Witter Discover — will purchase Mondex USA franchise rights for the U.S. to develop electronic cash cards that can store electronic cash on an encrypted microchip. A separate firm, Mondex International Ltd., which was founded in July by 17 international banking firms, has rolled out the same technology in Canada, Hong Kong and the U.K.

### Europe's spend spree

European corporations will be on an information technology buying spree during the next four years, according to a report by Frost & Sullivan, Inc., a marketing consultancy in Mountain View, Calif. The European IT market, valued at $177 billion last year, is expected to reach $261 billion by 2000. Germany is the leading European market, with 28.2% of the overall market in 1995; France and the U.K. were valued at 16.7% and 16.2%, respectively. Frost & Sullivan said IT developers and manufacturers will also face decreasing prices and growing competition in coming years.

**PAYROLL ROLL CALL**

**1996 salaries and compensation as a percentage of overall IS budget, by industry.**

| | |
|---|---|
| Retail | 24% |
| Services | 31% |
| Health care | 32% |
| Finance | 34% |
| Government | 34% |
| Utilities | 35% |
| Manufacturing | 39% |

Base: 300 companies

Source: Computer Economics, Inc., Carlsbad, Calif.

## AS/400 shops need to deal with year 2000 issue

*By Tim Ouellette*

AS/400 SHOPS may have good reason not to fear the year 2000. But that doesn't mean they should ignore it.

Although the AS/400 platform has some built-in advantages for converting dates to accept 2000, there may be little

**AS/400,** page 92

**UNSURE AS/400S**

**What actions has your company decided to take regarding the year 2000 issue?**

| | |
|---|---|
| Undecided | 40% |
| Fix or rewrite applications | 29% |
| Upgrade applications | 22% |
| Replace current system | 8% |
| Replace applications | 7% |
| Hire consultants | 5% |

Base: 100 AS/400 sites; multiple responses allowed.

Source: Information Resource Group, Sterling Heights, Mich.

• Software skills take backseat to business understanding

## Packaging the big picture

*By Julia King*

WITH SALES projected to top the $4 billion mark, vendors of packaged client/server applications have seen a banner year.

Now it is consultants' turn to make big money implementing the new software.

But sharp technical skills and configuration experience with an individual enterprise application are no longer enough to secure a well-paying position at consulting firms that specialize in package implementations.

Instead, business knowledge and expertise in a specific industry are required.

"My advice to any young person would be to understand the manufacturing process and then learn the nuances of a particular package," said Ron Morris, president of J. D. Warren & Associates, a Carnegie, Pa., company that specializes in implementing Baan Co.'s enterprise software.

"I want people who understand the supply chain process. I can teach them Baan," Morris said.

Part of what is driving the need for less technically oriented consultants is advances in the software itself. For example, packages from market leader SAP AG and fast-rising Baan include automatic configuration capabilities. That eliminates the need for consultants to manually plow through thousands of software tables to get a system up and running.

Instead, what is needed are experts who can fine-tune the packages to incorporate the best business practices within a particular industry.

"The value-add is no longer in configuration consulting," said Alfred Grunwald, CEO of Deloitte & Touche Consulting Group/ICS in Chadds Ford, Pa. "What users want now is someone who knows SAP, knows their business and understands their industry."

Soft Link's Gretchen Artig-Swomley says the future belongs to the software specialist. Page 92.

ICS is retraining most of its SAP consultants to specialize in the automotive, telecommunications and other industries. "They'll look at a particular business problem and apply the best industry solution rather than look at it from a configuration standpoint," Grunwald said.

**Packages,** page 92

## New management system keeps a lid on inventory

▸ *Manufacturer had rough road to tighter control*

*By Thomas Hoffman*

MANUFACTURING managers at Rohm & Haas Co. used to ask their salespeople to estimate their sales volumes each month. In turn, the plants produced the amounts of specialty chemicals required to meet those forecasts.

The problem was that forecasting wasn't being tied to production. Rohm & Haas had an inventory system for each of the 30 countries in which it operated. And the $3 billion company's 35 manufacturing plants often produced more resins or polymers than were needed.

As a result, Rohm & Haas' inventories and operating expenses were bloated. This left managers at the manufacturing plants as corporate "whipping boys" for overproducing, said Joe Gilbert, department manager of material management systems at the Philadelphia-based chemical maker.

**Before re-engineering, "we did a lot of floundering around."**
**– Joe Gilbert, Rohm & Haas**

To tighten the links in its

**Keeping a lid,** page 92

## Healing the call center

*By Jaikumar Vijayan*

BLUE CROSS OF California hopes to provide first-call problem resolution and much shorter response times for customers who call the managed-care company's service centers.

In the process, Blue Cross also hopes to trim the average call time by about 15 seconds and keep its customer support lines open 24 hours per day, up from the current 18 hours.

Blue Cross' 1,600 service representatives handle about 800,000 inquiries per month — each averaging more than 4 minutes — from health care providers, employer groups and individual policyholders.

"We are in the process of building a system that will allow us to provide responses to inquiries more quickly and productively," said George Steinhoff, vice president of group systems at Blue Cross. "It is the kind of service that we

**Call-response,** page 92

**BLUE CROSS Rx**

**Objective:** To upgrade customer service centers and reduce average call time.

**Solution:** Migrate applications off mainframe to client/server architecture with integrated telephone features.

**Technology used:** HP 9000 systems, and HP PC servers, management middleware and HP SmartContact software.

**Status:** Will upgrade 150 centers by the end of the year, the rest by middle of next year.

# AS/400 shops need to tackle year 2000 problem

CONTINUED FROM PAGE 91

help or time left if shops wait until they have to pay through the nose or rush through the work, analysts said.

The year 2000 problem arises because computers store date information as two digits. As a result, most systems see every date as 19xx, and computers will treat 2000 as if it were 1900.

**2000-READY**

IBM is trying to do its part by making CISC and RISC versions of the OS/400 operating system ready for 2000. That means the system will work properly without any changes in January 2000. Version 3, Release 2 and Version 3, Release 7 of the OS/400 and three newer AS/400 compilers are compliant in that way.

Earlier versions of the operating system don't provide such support and must be upgraded if users want to avoid problems in 2000, according to IBM. Users in online discussion forums have voiced concerns about the time and cost of upgrading to the latest and greatest operating system — when most of the installed base is still using older versions.

BellSouth Cellular is one company getting a head start reconfiguring its most important billing application with the help of a tool from Into 2000, Inc. in Jasper, Ga.

"We wanted a tool that would not take up very much of [our] AS/400 resources," said John Sapp, year 2000 project manager at the Atlanta telecommunications company.

**SAVES MONEY**

Into 2000 lets users do most of the analysis and file rebuilding on PCs attached to the AS/400. That avoids bogging down the system and lets users avoid any impact from the year 2000 work. Into 2000 also ships with its own built-in methodology, which cuts back on consulting costs. Sapp expects the tool to cut the cost of programmer hiring by nearly 60%.

Analysts said the AS/400's integrated database and a slew of long-lasting and reliable packaged applications give users an easier path to fixing the date problem than on other computer systems. For example, J. D. Edwards & Co. in Englewood, Colo., has updated its popular WorldSoftware suite to handle year 2000 dates.

"The way you deal with [the year 2000] on the AS/400 is pretty straightforward. That is a big competitive advantage" for both users and IBM as a vendor, said Al Barsa, president of Barsa Consulting Group, Inc. in Port Chester, N.Y.

**"We wanted a tool that would not take up very much of [our] AS/400 resources." – John Sapp, Bell South Cellular**

**INDECISION**

Even with that advantage, many AS/400 shops still don't know how they will attack the problem. Forty of 100 AS/400 sites haven't decided what actions to take for the year 2000 problem, according to a recent survey by Information Resource Group in Sterling Heights, Mich. (see chart, page 91).

But users still on the fence should note BellSouth Cellular's experience.

Even with his company's early start and time savings with Into 2000, the conversion of the billing application at BellSouth Cellular won't be completed until next summer, Sapp said.

That could bode ill for shops that expect to hire expensive programmers and outside help — especially small AS/400 sites that don't have the staff or time to deal with the problem themselves, analysts said.

# Packages

CONTINUED FROM PAGE 91

The rest of ICS' consultants will continue to function as technical experts, focusing on the complex task of integrating new packaged software with legacy systems and other packages and with the Internet.

In the long term, integration is an area where demand for technical consultants will remain high, said Josh Greenbaum, an analyst at Hurwitz Group, Inc. in Newton, Mass.

"There's always going to be some development and integration that will have to happen outside of the [packaged] software, and this is not the domain for your typical in-house [IS] development unit," he said.

## Software is the key

Unlike several of her counterparts, Gretchen Artig-Swomley, president of Soft Link, Inc., maintains that the brightest job prospects belong to those who specialize in a particular software package, rather than a specific vertical industry. Soft Link implements PeopleSoft, Inc. applications.

"People don't implement generic technologies. They implement packages," Artig-Swomley said. "In this market, it's only the people who specialize in a software package that will have long-term viability."

For now, research already shows that people skilled in client/server packages, especially PeopleSoft specialists, earn salary premiums. PeopleSoft skills earn a premium of 28%, according to *Computerworld*'s 1996 skills survey (CW, Nov. 18).

PeopleSoft experts are in such demand that Maplewood, Minn.-based Soft Link's 60-person staff is constantly under siege by recruiters.

"People will go to unbelievable lengths to get the names of our employees. They'll stop at nothing," Artig-Swomley said. Recruiters have posed as potential clients several times. Another time, a recruiter posed as a *Computerworld* reporter working on a story about the life of a PeopleSoft consultant. — Julia King

# Keeping a lid on inventory

CONTINUED FROM PAGE 91

global supply chain, Rohm & Haas in 1991 began to install a $750,000 IBM VM-based materials management system from Rockville, Md.-based Manugistics, Inc. The mainframe system is expected to help Rohm & Haas slash its inventories by $100 million by 1998 by creating a more integrated supply chain among international facilities.

To make these improvements, Rohm & Haas had to re-engineer its order-taking and forecasting activities among its sales forces, raw materials operations and finished-products plants. The company selected the Manugistics package because it linked well with the company's transaction and order-entry systems.

But the re-engineering didn't come easy. "Quite frankly, we did a lot of floundering around," Gilbert said. For example, senior management had to accept responsibility for sales and planning while the sales department tackled a new process for demand planning, he said.

It wasn't until Rohm & Haas hired outside consultant Paul Politte in late 1995 that Gilbert was able to convince the chairman's office of the need to re-engineer business processes. Politte showed Rohm & Haas "that we didn't have a prayer of getting a return on our IT investments unless we re-engineered our business processes," Gilbert said.

**SUPPLY CHAIN MANAGEMENT**

If the December sales forecast for monomers, a chemical compound, is trimmed for Eastern Europe by 5%, the changes can be entered into the system, which notifies the raw materials plant in Houston to curtail production. By tying the company's forecasting, inventory and ordering systems together, managers around the world can rely on a single point of entry for product and other information.

Rohm & Haas expects to complete its final software installations at manufacturing sites in Kankakee, Ill., and Charlotte, N.C., in February and at a plant in the Philippines later next year.

So far, the software has helped the company reduce its inventory costs by $40 million. Gilbert placed the cost of the company's worldwide supply chain management efforts, including business process re-engineering expenses, at $50 million to $60 million.

Supply chain management is a problem that is dogging manufacturers in most industries. Companies "have built their businesses by hedging their sales forecasts" between stand-alone operating units, said Ann Grackin, partner of the supply chain practice at Benchmarking Partners, Inc. in Cambridge, Mass.

# Call-response management

CONTINUED FROM PAGE 91

feel will give us an edge."

The improvements stem from a combination of hardware, middleware and computer telephony integration technology that Blue Cross is implementing.

**PHASING IN**

Steinhoff said Blue Cross plans to complete its project in phases.

In the first phase, most applications and databases will continue to reside on the firm's mainframes as new graphical user interfaces allow clients to access the information on them.

The telephone-database integration will take place next, before the company migrates certain applications to the new setup.

When the project is complete, Blue Cross expects to have moved several mainframe applications to a client/server architecture based on Hewlett-Packard Co.'s HP 9000 enterprise Unix servers, HP PC servers and software for managing and integrating telephony-based customer service offerings. In the process, the company will also replace an dumb terminals that feed off the mainframes with PC server front ends.

**THICK AND THIN**

"We wanted to have a thick server/thin client implementation, as opposed to having all the [telephony] middleware sit on desktops," Steinhoff said. "This makes things easier when you start moving toward the Internet."

Once the systems are fully implemented — by the middle of next year — all calls to Blue Cross will be handled by an interactive voice-response unit that is also integrated with the customer database. The unit prompts users for specific responses and puts details such as benefits, claims and eligibility information in front of the representative to whom it forwards the call.

The approach minimizes the time taken to handle the call and lets the customer resolve questions with just one call, Steinhoff said.

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**NCs: For the kids**
Network computers are vital to the well-being of our children in the Information Age, Peter G. W. Keen argues. Page 100

# OUTSOURCED and HAPPY

[illegible] Love's job was outsourced to Origin Technology, he was suspicious and angry. Now, about two years later, he says, "I get the feeling ... that I am contributing to the bottom line of my company"

**The word outsourcing conjures up feelings of anxiety, anger and helplessness. But some "rebadged" IS professionals have found contentment and opportunity after their old companies farmed out their jobs.**

BY LESLIE GOFF

When Joe Love arrives at his office in Arlington, Texas, every morning, he makes himself a hot cup of coffee in a kitchen that was once a cluster of cubicles.

He's been working in the same building for more than 15 years, but a new shingle hangs outside. A new company logo graces his paycheck. But the change Love has felt most profoundly over most of the past two years is more than cosmetic. The database systems group manager says he feels he is more valuable than ever.

"I get the feeling . . . that I am contributing to the bottom line of my company," says Love, who was "rebadged" from Houston-based Halliburton Energy Services to Princeton, N.J.-based Origin Technology. "I've gone from being part of a cost center to someone who generates revenue."

Love is part of a growing segment of information systems workers whose jobs, because of outsourcing arrangements, have been reassigned to the outsourcer but who continue to work in the same location alongside the same co-workers. Yet Love says that before he began to feel so enthusiastic about his rebadging, he went through a period marked by denial, anger and, finally, acceptance.

At first, he was suspicious of his longtime employer's motives. After all, he had been in the oil industry for 15 years, and giving up his identity as an oilman was tough. He was also anxious about whether the outsourcer would commit to him.

But for Love and other IS professionals who have survived the initial anxiety and loss involved with a rebadging, their new employment status has been a boost. Outsourced IS professionals, they find, really do have more fun. They say they enjoy better training, a higher salary ceiling and increased job stability.

"There's an alignment of core competencies between what an IS professional does and what the new employer does, which tends to increase the gratification of the employee," says Frank Casale, executive director and co-founder of The Outsourcing Institute, a research firm in New York. "If

**Outsourced**, page 96

# OUTSOURCED and HAPPY

CONTINUED FROM PAGE 95

you're an IS pro in an IS services organization, there's virtually no limit to how high up you can move."

**ENCHANTED HONEYMOON**

At California Federal Bank, an unanticipated and lengthy delay in obtaining regulatory approval for its deal created a long honeymoon for the bank's data center employees and the outsourcing vendor, Alltel Information Services Co. in Little Rock, Ark.

"When the bank first announced the deal, it was an extremely nervous time," recalls John Boynton, then telecommunications manager at the bank's Rosemeade, Calif., data center. "You hear all the war stories, and you don't know what the outcome is going to be."

It was 1991, and the recession was taking hold in Southern California. Boynton, who helped write the bank's outsourcing requests for proposals, says that as a manager, he was concerned for his staffers; as an employee, he was concerned for his career.

"In retrospect, working for the bank, we were in positions we couldn't move out of," Boynton says. "Now we can look at other accounts and other locations. We have a lot more flexibility with Alltel. And training is a definite plus."

California Federal renewed its deal with Alltel last December. Boynton is now an account manager at the company.

**MARRIED, WITH CHILDREN**

For Mary Fairbairn, an AS/400 systems analyst formerly employed at Filene's Basement Corp. in Wellesley, Mass., accepting her rebadging to Andersen Consulting was painless — a matter of merging career and family goals.

"The reaction in the room was mixed, but mine was quite different," she says. "For me, the idea of being able to go to work for a larger company, to be involved in business process management, but to have the same office to go to every day was very attractive. I have a family I need to be here for."

Fairbairn also says her attitude toward the change was shaped by her boss, the company's vice president for application systems, Elizabeth Aiken, who outsourced herself along with her team. The rebadging turned out to be fortuitous. Not long after the outsourcing deal took place, Filene's was forced to begin closing a number of discount retail outlets and downsizing its ranks.

**WORKING ON THE RAILROAD**

Bill Malin, an independent strategic IS management consultant in Annapolis, Md., found an identity crisis among IS employees who had been rebadged by a major railroad.

"There's something so romantic about trains that people view themselves as railroaders first and IS professionals second," he says. "They had all spent a lot of time in the company and now could no longer identify themselves as part of the industry."

Moreover, once the outsourcing vendor took over the railroad's IS operations, the IS staffers were upset by their new employer's seeming ignorance of the railroad's lifeblood.

"I think there was frustration across the board that the new vendor did not understand the urgency of timely service," Malin explains. "The vendor's staff hadn't internalized the idea that a railroad is a [24-hour-per-day, seven-day-per-week] proposition. To railroaders, having the computer systems up and running is life and death, and the vendor just didn't get it at first."

**ALL'S WELL THAT ENDS WELL**

The substance of Love's job at Origin is the same as it was at Halliburton, but the big picture is substantially different. He has broader responsibilities, managing several accounts that encompass the insurance, shipping, manufacturing and high-technology industries and his former employer. After spending 15 years in oil field management, he's rounding out his technology expertise with newly acquired business perspectives.

"Learning the different industries has been the fun part," he says. "You get to go out and see how others have accomplished things. You begin to see new ways of doing things that maybe you hadn't thought of before."

Love says he stuck out the transition thanks largely to the advice of a former colleague who had been rebadged a couple of years earlier. "Halliburton had been telling us how much better it would be to work for a company whose core business was IS because the attitude toward us and the overall atmosphere would be better," he says. "My friend verified all that for me. At the time, I doubted it, but it has absolutely turned out to be true."

---

*Goff is a freelance writer in New York.*

## DOING IT RIGHT

**Management decisions about how to communicate an outsourcing arrangement and new employee policies for reassigned workers can impart a subtle yet strong message to other parts of the company, says Tracy Bernasconi, advisory services manager at The Outsourcing Institute.**

**Outsourcing is called most successful when no one can see the difference between the retained internal staff and the outsourced staff, Bernasconi says. Both staffs should have the same dress code and holidays and be included in the same activities, such as company picnics. Although it may not be practical to maintain employee perks forever, he recommends a temporary period in which outsourced employees are gradually weaned off their former benefits.**

Outsourcing is called most successful when no one can see the difference between the retained internal staff and the outsourced staff

**"I worked with one old, family-owned company where people had put in lifetimes, and their parents had worked there," Bernasconi says. "One employee asked if they would still get their Christmas turkeys. You really should continue these things they feel a part of."**

**Filene's Basement, which outsourced its application systems group to Andersen Consulting, immediately cut all the outsourced employees' perks, such as their 30% retail discount.**

**"Losing the discount hurt," says Elizabeth Aiken, the group's vice president who outsourced her own job along with her staff. Being stripped of all identity as a Filene's employee bruised the IS staff members' feelings and left end users confused about how to interact with the rebadged Andersen employees.**

**But be aware that even the best management efforts won't engender 100% enthusiasm about a reassignment, says Frank Casale, executive director of The Outsourcing Institute. – Leslie Goff**

## FEELING THE PAIN

**Advice for IS managers on handling transitions to outsourcers**

**Although every outsourcing deal results in some natural attrition, IS management can minimize fallout and anxiety among rebadged IS staff by doing the following:**

- Acknowledging their sense of loss and stripping of identity
- Bringing the outsourcer in to work side-by-side with the rebadged staff prior to the actual changeover
- Focusing on the outsourcing arrangement as an opportunity for sustained career mobility, better training and professional development, and increased job stability

**"Don't pretend that it's business as usual. Be aware of the people side of the whole equation."**
**– Stan Lepeak, program director of Advanced Information Strategies Service, Meta Group, Inc., Stamford, Conn.**

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**Fernando Flores**, former Finance Minister of Chile, philosopher, author, entrepreneur and Chairman of Business Design Associates, on the future of business communications

**Murray Gell-Mann**, professor and co-chair of the Science Board at Santa Fe Institute and 1969 Nobel Prize winner in physics, on the convergence of physics, biology, and information technology

**Brenda Laurel**, actor, author, and researcher in computers and theater arts at Interval Research Corporation, on how the notion of "what computers are" is evolving

**Pattie Maes**, associate professor at MIT Media Lab and founder of Firefly Network, Inc., on how intelligent agents will interact in software ecologies

**Carver Mead**, pioneer in VLSI and Moore Professor at Cal Tech, on semiconductors and whether Moore's Law will persist in the long-term future

**Nathan Myhrvold**, Microsoft Group Vice President, on software and the software industry

**William Perry**, US Secretary of Defense, on the impact of information technology on international security

**Raj Reddy**, Dean of the School of Computer Science at Carnegie Mellon University, on strategic directions in computing research

**Elliot Soloway**, Computer Science, Education, and Information Professor at the University of Michigan, on information technology and K-12 education

**Bruce Sterling**, Science Fiction and Non-fiction Author, on the dark side impacts of information technologies on society

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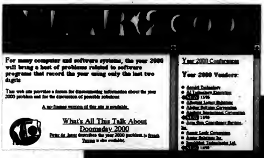
# RESOURCES: WEB SITES FOR IS MANAGERS

By Leslie Goff

## Year 2000 Information Center

*www.year2000.com/y2k-main.html*

This site had some growing pains but has recently come into its own, evolving from a panicky red-alert site into an actual resource for information systems managers facing the year 2000 problem. Much of the original content still has an urgent tone and is loaded with attitude. The quality in ea varies, but the site covers the range of year 2000 issues — from staffing to us and products to liability.



For many computer and software systems, the year 2000 will bring a host of problems related to software programs that record the year using only the last two digits

This web site provides a forum for disseminating information about the year 2000 problem and for the discussion of possible solutions.

A no-frames version of this site is available.

What's All This Talk About Doomsday 2000

Peter de Jager describes the year 2000 problem (a French Version is also available).

Year 2000 Conferences

Year 2000 Vendors:

Particularly promising is a yet-to-be-finished jobs section that lets employers post job openings and seek candidates for conversion projects. The User Group section provides links to local and regional year 2000 organizations. The Archives links to some 30 articles and reports from a variety of sources, such as "Party When It's 1999," a white paper by three IS professionals at Prudential Securities, Inc. The links page offers more on the subject, such as a J. P. Morgan Securities report: "The Year 2000: Ready or Not, Here It Comes," and a noteworthy IBM white paper.

The site's weak points: some hidden sales pitches for tapes by the site's developer, Peter de Jager, and the site's banner article, a nearly 4-year-old diatribe about IS' failure to recognize the critical nature of Doomsday 2000.

## American Productivity & Quality Center International Benchmarking Clearinghouse

*www.apqc.org*

If you're involved in a best practices benchmarking, knowledge management or a customer satisfaction, productivity and quality management initiative, you'll find plenty of training and research for sale here. But if you're looking for online reports and articles or just want to acquaint yourself with current thought and activity, be patient. This site has useful content, but getting past the product pitches requires some focused pointing and clicking.

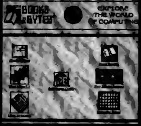
For information about the clearinghouse, its members and events, or to access a list of free downloadable reports (such as "Leveraging 'Best Practice' Strategies"), use the six buttons across the top of the home page. To find articles and case studies, use the subject-oriented buttons across the middle of the page.

## Books & Bytes

*www.bytes.com*

This online bookstore of mostly computer titles could be a significant time-saver for IS managers who like to keep a well-stocked bookshelf for their staffs — except for one significant failure: It doesn't provide abstracts or tables of contents for its extensive list of hard-to-find computer titles. It describes only a few of the books on sale, making it hard to browse.

Moreover, site sections that offer fresh content, such as a newsletter, events page and several interactive features, aren't kept up-to-date. But if you have a ready list of specific titles or authors, Books & Bytes offers online corporate account registration (It requires two major credit cards and a bank reference; you must spend $600 annually to qualify) and easy searching and ordering.



## The World Wide Web Security FAQ

*www.genome.wi.mit.edu/WWW/faqs/www-security-faq.html#contents*

Here's everything you wanted to know about Web security but were loath to ask. You can quickly link to areas of specific interest from the three-page table of contents, which itemizes the content available here.

The site is maintained by Lincoln D. Stein, author of *How to Set Up and Maintain a World Wide Web Site*, and the material is largely abstracted from his book.

He answers 73 questions in nine categories, such as "What types of access restrictions are available?" and "How private are my requests for Web documents?" Use it to determine what you need to know to respond to executive management concerns and what your staff must know about implementing secure Web sites.

## Red Herring

*www.herring.com*

The Red Herring site offers articles from its print magazine, which covers the converging entertainment and information technology industries. But it also provides three other sections of interest to IS managers: the Entrepreneurs' Resource Center, Company Profiles and the Insider's Event Guide.

The Entrepreneurs' Resource Center is intended for start-up managers, but it contains relevant "workshops" for any manager who is responsible for a Web initiative.

herring.com

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*Goff is a freelance writer in New York.*

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British
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John Siegel
Price
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Naomi Seligman
Research Board

Kicking off ETS '97 is John Cross, General Manager of IT for British Petroleum PLC. Cross discusses the "Transformation of the IT Function at British Petroleum" as they moved from a mainframe VMS environment to client/server. A special integrator keynote has been added to the program this year, featuring John Siegel, National Internet Technology Domain Leader of Price Warehouse. The closing keynote is provided by Naomi Seligman, Senior Partner of the Research Board, who covers some of the data collected by her exclusive organization.

### Technology Provider Strategy Panels

Here is your chance to hear from a senior level IT executive from an ETS sponsor company in a moderated panel format.Corporate strategies and future directions are revealed, as well as answers to questions about new technologies and emerging trends. Hear their stories and learn what you need to know about these companies in order to make beneficial IT investments.

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### Technology Panels

The following three, 60-minute case-study panels discuss technology applications and implementation, including performance expectations, scope, process and return on investment.

**Distributed Computing**
Monday, May 19, 1997
Moderated by: Alan Alper
Editor, Magazines Group
*Computerworld*

The effective use of distributed computing technology raises new challenges for the IT executive. The following issues will be discussed to help you separate promises from reality and to effectively estimate the impact on your resources:

- migration of existing systems
- increased need for object-oriented development
- systems management procedures
- user file management and related fundamental security issues
- adequate hardware and software componentry
- language standards and interoperability

**Data Mining and Data Warehousing**
Tuesday, May 20, 1997
Moderated by: Alan Paller
Director, Research and Education
Data Warehousing Institute

Many issues plague the IT executive attempting to implement a successful data warehousing or data solution for their enterprise. Here's your opportunity to get the answers to the following questions:

- what kind of infrastructure is necessary to support the amount of data that will be stored and processed?
- do I need a relational database or multi-dimensional database?
- what set of tools will most appropriately support end-user needs?
- what are the real capabilities, the relative costs and the return?
- should analysis happen on the desktop or on the server and who has what level of access?
- search engine, text retrieval engine and sort processeing options

**Doing Business with Internet Technologies**
Wednesday, May 21, 1997
Moderated by: Gay Slesinger
Vice President,
Giga Information Group

What are the viable solutions, the costs and the expected return from the corporate business perspective when doing business with Internet technologies? This is your opportunity to discuss solutions on:

- choice of architecture
- security and standards issues
- capitalization of the Internet for intranet purposes
- infrastructure support issues.
- planning for effective use of the Internet beyond the year 2000

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# RESOURCES: IS MANAGER'S BOOKSHELF

### Planning and Designing the Data Warehouse

*Edited by Ramon Barquin*
*and Herb Edelstein*
*Prentice Hall PTR, Upper Saddle River, N.J.; 297 pages; $39 (hardcover)*

On paper, data warehouses make sense as specially organized collections of data that let users do detailed queries without crippling operational systems. In reality, data warehouses can be multiyear, multimillion-dollar projects that can blow up in an information systems manager's face.

This collection of essays is a useful, if somewhat superficial, introduction to data warehousing. For business managers, it provides a fairly complete outline of what it takes to plan, cost-justify, build and manage a data warehouse. It also provides questions that help users evaluate the amount and type of data they will need in the warehouse. But the essays gloss over some potentially major problems, such as the political and cost issues that arise when creating an enterprise data model.

There are some strong sections for IS managers, particularly the detailed descriptions and suggestions in the areas of database design and choosing the proper online analytical processing technology. There also are helpful tips on how to cost-justify the data warehouse, find executive sponsorship and manage user expectations. But too many of the essays provide bland descriptions of warehousing products without mentioning their failings, such as the shortcomings many users have found in off-the-shelf tools for extracting complex data sets from operational databases for their warehouses. There's only a passing reference to the Internet, and intranets — an increasingly popular method for accessing warehouses — aren't mentioned.

Despite the flaws, this is a worthwhile basic reference for business or IS managers trying to understand data warehousing. — *Robert L. Scheier*

### Information Technology Outsourcing Transactions: Process, Strategies, and Contracts

*By John K. Halvey*
*and Barbara Murphy Melby*
*John Wiley & Sons, New York; 550 pages plus disk; $145 (paperback)*

Halvey, a top outsourcing attorney (his clients have included Xerox Corp., McDonnell Douglas Corp. and AlliedSignal, Inc.), and his associate have hatched a thorough tome on the legal side of outsourcing.

The book includes 160 pages of advice on every aspect of IS outsourcing, from planning and requests for proposals through negotiation, financial and personnel issues. There are also chapters on transitional outsourcing and international transactions. Perhaps you can get some of this advice from the zillions of articles on outsourcing, but you probably won't find 400 pages of forms, checklists and sample documents to help you negotiate and manage your contract. (They're also supplied on the disk.)

It's dense, but an attentive IS manager can use it as a reference or guide. Considering how much you have to lose on a bad outsourcing contract, the price for this book is a bargain. — *Allan E. Alter*

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**PETER G. W. KEEN**

## NETWORK COMPUTERS: DO IT FOR THE CHILDREN

The $500 network computer may or may not destroy the Microsoft business model, make Java the Cobol of the multimedia era or turn the Internet into an applet equivalent of the Library of Congress.

There are so many arguments for and against the network computer becoming the new mainstream and so many uncertainties that no one's prediction, mine included, is more than a guess, a wish or a vested interest.

I hope it happens for a very simple reason: The network computer is vital to the well-being of our children.

To be left out of the information revolution is to be locked out of the information economy and the mainstream of jobs. PCs are creating electronic haves and have-nots. Yes, it's astonishing that $1,500 buys you a fully loaded multimedia machine, but that's still a heavy burden for the ordinary household, and it's an impossible one for many schools.

Far from enthusing about how many PCs are out there and how the Internet will change education, we ought to be much more concerned with how relatively few PCs are being used widely, actively and often. Venerable Apple IIs still sit on many desks, and 486 machines are rarely being replaced with machines that can exploit the multimedia facilities of the Internet.

Most kids get only occasional access to PCs. Support costs for Windows 95 and LANs are the same for schools as for businesses. And if you compare the jump in complexity and obesity from DOS to Windows 95, the thought of moving to new versions of Windows in the future must bring shudders.

Let's accept that network computers may not be a major replacement for standard PCs in business. That doesn't alter their social importance. It also doesn't negate the economic opportunity they represent: the cellular giveaway.

Cellular telephones are rarely sold as full-price retail products; they come cut-price in deals from cellular service providers. A typical ad offers a "free" phone for a $19.99 monthly service contract, with enticements of free minutes and free weekends. The electronic product is the loss leader for the service. That's the obvious opportunity the network computer offers. How soon before we'll see banks offering their own branded network computer marked "cable ready" as the access tool for their services, with the Internet bundled in "free" with one month of free use of 50 nifty Java applets? Will phone companies or cable providers similarly subsidize the device to get the service volumes?

Once the PC has a subsidizing sponsor who can slash the price and still make profits, the economic base of computing changes. That would pull many families and schools back into the information economy. It's obviously also far easier for schools to raise money for 20 network computers than for 20 soon-to-be-obsolete PCs.

Because the Internet is fundamentally a multimedia universe struggling to get free from the constraints of slow bandwidth, only muscle PCs can meet today's needs. If that continues, so will the widening haves/have-nots gap. To close it for good, multimedia has to be on the 'net, not in the PC hardware and software. The bandwidth is coming — with so much demand that supply is sure to meet it well within three years.

All this is just wishful thinking. I hope many IS people share the wish. Let's get away from opinionating and predicting to influencing. There are too many dogmatic articles about network computers which say, "Never" ... "Dumbest idea I've heard" ..., "Can't work."

Perhaps. The question shouldn't be, "Will it happen?" but "Do we want it to happen, and can we help it happen?"

---

*Depending on the month, Keen is an author, consultant, public speaker or professor in Great Falls, Va.*

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# f.y.i.

## EXECUTIVE TRACK

Ameli Courter
David P. McNicholas
Steve G. Lanzi
Arth
Campbell
Ted Daniels

**Victor L. Fischer** was named chief information officer at Connect, Inc., a provider of Internet-based interactive commerce and order management application software. Fischer formerly worked at Xilinx and Mips Computer Systema, Inc. Connect is in Mountain View, Calif.

**Richard J. Ranelli** was named vice president and CIO at WellPoint Health Networks in Woodland Hills, Calif. He was executive vice president and CIO at Summit Bank in Chatham, N.J.

**Joseph P. Bolduc** was named CIO at Fisher Scientific International, Inc. in Hampton, N.H. He has more than 20 years' experience in the information technology field and most recently was a manager at Oracle Corp.

**David P. McNicholas** has joined HFS, Inc. in Parsippany, N.J., as executive vice president and CIO. HFS is a global consumer services company. It owns Avis, Inc., the rental car company.

**Dean Ruhmel** has joined PIA Merchandising Services, Inc. in Irvine, Calif., as senior vice president and CIO. He was director of IS at Fedco, Inc.

**Jeff R. Scherb** was named senior vice president and chief technology officer, a new position, at Tribune Co., a Chicago-based information, education and entertainment firm. Tribune publishes four daily newspapers, including the *Chicago Tribune*. Scherb formerly worked as a vice president at Dun & Bradstreet Software.

**Delmar Stuerner** was named vice president of IS at Pleasant Holidays, a travel company in Westlake Village, Calif. He has more than 30 years' experience in computer systems and software development and enhancement.

**Carolyn S. Davis** was promoted to vice president and CIO of information services at KTEC Electronics, the contract manufacturing subsidiary of Kent Electronics Corp. in Houston. She was IS manager at KTEC.

**Michael F. Kraley** has joined Individual, Inc. in Burlington, Mass., as senior vice president of engineering and chief technology officer. He most recently was a vice president at AT&T New Media Services in Cambridge, Mass.

**Steve G. Lanzl** was named vice president of information technology at Bowater, Inc., the largest producer of newsprint in the U.S. The company is in Greenville, S.C.

**Thomas A. Greenwald** was named executive vice president and CIO at StockNet, Inc., a multimedia entertainment company in New Paltz, N.Y.

**Jerry Dean Campbell** was named the first CIO at the University of Southern California. He will continue to serve as university librarian and dean of university libraries.

**Buddy Pickler**, senior vice president of MIS at Ingram Book Co. in La Vergne, Tenn., was named CIO at Ingram Book Group. Ingram is a wholesaler of trade books and textbooks.

**James "Zeke" Zoccoli** was named CIO and vice president of IS at PC Service Source, Inc. in Dallas. He has 15 years' IS experience. PC Service Source supplies service logistics to service providers and OEMs in the PC industry.

**Wollaston B. Morin** was named vice president of IS at Hills Stores Co. Hills, in Canton, Mass., is a discount retailer. Morin was most recently vice president of IS at Stride Rite, a shoe manufacturer/retailer in Lexington, Mass.

**Mark A. Lega** was named division vice president of IS at Nalco Chemical Co. in Naperville, Ill. Nalco makes and sells water treatment and process chemicals and services.

**Arthur D. Sciarrotta** was named vice president of IT at Florida Power Corp. Florida Power, in St. Petersburg, serves 1.3 million customers in central and northern Florida.

**Ted Daniels** was named head of the Computing and Communications Division at the U.S. Department of Energy's Brookhaven National Laboratories in Upton, N.Y. He has worked at Brookhaven since 1967.

**Elizabeth "Libby" Ghekiere**, senior vice president of Bank of America's Internet Banking Division, was named chairwoman of The Internet Council. She will serve a two-year term.

**Amelia "Amy" Courter** was named vice president of MIS at Valassis Communications, Inc., a sales promotion company in Livonia, Mich.

**Roy D. Pea**, former dean of Northwestern University's School of Education and Social Policy, has joined SRI International in Menlo Park, Calif., as director of the Policy Division's Center for Technology in Learning. The center works with educators to develop and adapt new computing technologies for use in education.

**Fred Gorrell** was named senior vice president of IS at Stein Roe & Farnham, Inc. He previously worked at Strong Capital Management, Inc. Stein Roe is an investment management firm in Chicago.

**Alan W. Anderson** was named senior vice president, technical services, at The American Institute of Certified Public Accountants. Anderson will lead technical efforts for the 328,000-member accounting association.

**Jean McKenna**, vice president of payment technologies at Visa International, Inc., was reelected president of the Smart Card Forum. The nonprofit organization promotes the use of multiple-application smart-card technology.

**Keitha T. Schofield**, senior vice president and CIO at Farmers Insurance in Los Angeles, was named the company's first executive vice president, support services. Schofield will remain CIO and will manage human resources and plan for changes in the company's business processes.

**David E. McDowell**, former CIO at IBM, U.S., was named chairman and CEO at Medaphis Corp. in Atlanta. Medaphis provides transaction processing and client/server IT systems and services.

# brilliance

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# Buyer's Guide

**THE HOLIDAY SPIRIT: Look, admit it. We're all in it for the toys. Here are a few of our favorites (and some duds) as reviewed by our staff. Full reviews at our Web site.**

## TIMEX DATALINK WATCH

When I first got *Timex Corp* 's watch (**www.timex.com**), I really wasn't sure why I would want to use it. But after I had the **$130** watch in my office for a few days, it was clear to me that this is a timepiece to lust after (IS people in our office wanted it badly) The software was fun, and easy to install and use — you can choose your watch sounds, among other things And when you point the watch at the flashing bars of light on your PC monitor, your cubicle-mates will think you're James Bond — L.H

## FAX VIEW

*Reflection Technology, Inc.*'s (**www.reflection.com**) personal fax viewer has all the trappings of a Maxwell Smart/Agent 99 spy toy. The stylishly designed **$349** Fax View slips right into your coat pocket. It can receive, send and store faxes until you have time to view them. — S.D.

## DESTINATION BIG SCREEN PC

"Looks like a TV, acts like a PC," says *Gateway 2000.* (**www.gw2k.com**) For **$2,999**, you get a 133-MHz Pentium processor, a 31-in. monitor, a wireless keyboard, 32M bytes of RAM, a 2.5G-byte hard drive, a 33.6K bit/sec fax modem, eight-speed CD-ROM drive and more — C.G

## MVNET-E CAMERA

This live videocamera/World Wide Web server/broadcast station from *Active Imagining, Inc* (**www.activeimaging.com**) does everything but baby-sit your kids . wait, it *can* baby-sit your kids! The **$4,400** camera has its own Web server, which allows a Windows 95 user to configure multiple output ports for several devices — J B

## MONTY PYTHON & THE QUEST FOR THE HOLY GRAIL

Loaded with toilet humor and punctuated by graphic violence, *7th Level, Inc.*'s (**www.7thlevel.com**) game is about as logical as killer rabbits, coconut shells that appear in 10th century England, and knights who say "Ni!" and demand a shrubbery. In other words, the **$49.99** Monty Python CD-ROM is good for a few hours of laughs, but only if you liked the 1974 movie and still smirk if you hear a co-worker chirp, "I'm not dead yet." — J.C.

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- 50. Business Service (except DP)
- 60 Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/ Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90 Computer/Peripheral Dealer/Dist./ Retailer
- 95 Other__________ (Please specify)

**2. TITLE/FUNCTION** (Circle one)

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- 21 Dir./Mgr MIS Services, Information Center
- 22. Dir./Mgr Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr. Tech. Planning, Administrative Services
- 23. Dir./Mgr Sys. Development, Systems Architecture
- 31 Programming Management, Software Developers
- 41 Engineering, Scientific, R&D, Tech, Management
- 60. Sys. Integrators/VARs/Consulting Mgt.

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- 13. Treasurer, Controller, Financial Officer

**DEPARTMENTAL MANAGEMENT**
- 51 Sales & Mktg Management
- 70 Medical Legal, Accounting Mgt.

**OTHER PROFESSIONAL MANAGEMENT**
- 80 Information Centers/Libraries, Educators, Journalists, Students
- 90 Other Titled Personnel

**3.** Dir you use, evaluate specify recommend, purchase (Circle all that apply)

Operating Systems

| | |
|---|---|
| (a) Solaris | (e) Mac OS |
| (b) Netware | (f) Windows NT |
| (c) OS/2 | (g) Windows |
| (d) Unix | (h) NeXTstep |

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

**4.** Which of the following software products do you buy specify recommend or approve the purchase of? (Please check all that apply)
- (a) ☐ Internet software
- (b) ☐ Internet browsers
- (c) ☐ Web authoring/development tools

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- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/ Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90 Computer/Peripheral Dealer/Dist./ Retailer
- 95. Other__________ (Please specify)

**2. TITLE/FUNCTION** (Circle one)

**IS/MIS/DP MANAGEMENT**
- 19 Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
- 21 Dir./Mgr MIS Services, Information Center
- 22 Dir./Mgr Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr Sys. Development, Systems Architecture
- 31 Programming Management, Software Developers
- 41 Engineering, Scientific, R&D, Tech Management
- 60 Sys. Integrators/VARs/Consulting Mgt.

**CORPORATE MANAGEMENT**
- 11 President, Owner/Partner, General Mgr
- 12. Vice President, Asst. VP
- 13. Treasurer, Controller, Financial Officer

**DEPARTMENTAL MANAGEMENT**
- 51 Sales & Mktg. Management
- 70 Medical, Legal, Accounting Mgt.

**OTHER PROFESSIONAL MANAGEMENT**
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

**3.** Dir you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems

| | |
|---|---|
| (a) Solaris | (e) Mac OS |
| (b) Netware | (f) Windows NT |
| (c) OS/2 | (g) Windows |
| (d) Unix | (h) NeXTstep |

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

**4.** Which of the following software products do you buy, specify, recommend or approve the purchase of? (Please check all that apply)
- (a) ☐ Internet software
- (b) ☐ Internet browsers
- (c) ☐ Web authoring/development tools

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# STUFF

Virtual Technologies, Inc.

## CYBERGLOVE

CyberGlove from *Virtual Technologies, Inc.*, in Palo Alto, Calif., has 18 sensors that provide touch sensations to your palm and each of your fingers. Programmable tactile feedback reportedly simulates contact between your virtual hand and the virtual world. **Pricing varies.** — C.G

## NV-100 COMPACT NIGHT VISION SCOPE

I always wanted a night vision scope after seeing them in espionage movies. But after an hour of playing with Night Vision Scope from San Diego-based *Moonlight Products*, I found myself asking, "What the hell would I use this for?" Who really cares — this is cool and now affordable at **$399**. Besides, you can justify it to your boss; tell him it could help you make your way around those lights-out data centers. — K.B.

## LOGICODE QUICKTEL II-C FAX/MODEM

*Logicode Technology, Inc.*'s **$369.95** product wears many hats (**www.logicode.com**). Through Windows and Windows 95, it acts as a data modem (up to 33.6K bit/sec.) and as a fax modem. With the bundled Quick Link Message Center software, this device works as a speakerphone and provides personal voice mail. — T.L.

## WYNDMAIL

*Wynd Communications Corp.*'s (**www.wynd.com**) plug-and-play wireless connectivity product is limited to electronic-mail and file transfers. They cost **$149.99 per month** for unlimited messages, but these wireless modems miss the mark for required functionality. — T.L.

## AT&T POCKETNET PHONE

The idea is ahead of the technology on this **$500** phone. You can read relatively short E-mail messages and collect simple data feeds on *AT&T Wireless Services, Inc.*'s (**www.airdata.com**) product. But sending E-mail is v-e-r-y s-l-o-w. Imagine typing E-mail messages using the keypad on your telephone. — J.C.

## SEJIN WIRELESS KEYBOARD

As long as the infrared receiver with its 10-ft. cord is placed in an area with a direct line of sight to the panel on the keyboard, *Sejin Electronics, Inc.*'s (**www.sejin.com**) wireless keyboard works nearly flawlessly — and for **$99**. — T.L.

COOL ☛ Page 106

# MORE COOL STUFF

CONTINUED FROM PAGE 105

## CASIO QV-10KA

If you want a quick, relatively low-cost (**$699**) introduction to digital photography and don't especially care about picture quality, then this is the camera for you. Weighing in at only 7 ounces, the *Casio, Inc.* (**www.casio-usa.com**) QV-10KA is no bigger than most pocket 35mm cameras, yet the bright 1.8-in. color LCD screen gives you instant feedback on any of the 96 photos you can fit into its flash memory. — P.G.

## YOU DON'T KNOW JACK EXTRA LARGE

"You Don't Know Jack" (**$39.99**) from *Berkeley System, Inc.* (**www.berksys.com**) is a pleasant enough time-waster of a CD-ROM quiz game. The trivia categories are probably the funniest thing about this title, including Dairy Treats, Digestive Tracts and World Dominatrix. But Trivial Pursuit this ain't. — S.D.

## SOUND BAR

If you prefer to say what you think instead of writing it, *Midisoft Corp.* (**www.midisoft.com**) Sound Bar provides an audio mail system (**$29.95**). — J.B.

## NINTENDO 64

You may need your motion-sickness pills before you dive into this high-powered descendant of the blockbuster Super Nintendo Entertainment System. But once you get accustomed to the hypercharged graphics, you'll never want to go back. The radically redesigned game controllers are more ergonomically friendly, and stereo sound definitely rules. The downside is a dearth of available software, but this **$199.95** game machine from *Nintendo of America, Inc.* (**www.nintendo.com**) is bound to be so popular that this won't be a problem for long. This is the interface of the future we're talking about here. — P.G.

## PYST

Pyst is for every sucker who couldn't find his way off $#@$#@%$ Myst island. Pyst, from *Parroty Interactive* (**www.pyst.com**), spoofs the popular game Myst by showing the fallout of what 4 million pent-up visitors can do to a cryptic tourist trap. The pristine dock is now a graffiti-ridden sewer. Players travel through 10 interactive postcards with hilarious video clips and sound bites. What's best about Pyst (**$15**)? You'll actually finish it. — K.B.

## TIMELAPSE

In *GTE Entertainment*'s (**www.im.gte.com**) complex game, players explore three ancient worlds and follow clues to solve a mystery. The **$69.99** CD-ROM can end differently each time you play. If you ever get to the end. — T.O.

## SPECTRUM RINGMOUSE

The **$99** RingMouse mouse from *Kantek, Inc.* (**www.kantek-spectrum.com**) was easy to install, and the ring is comfortable and easy to click. But I couldn't aim the thing to save a life, which makes it very difficult to do real work. — L.H.

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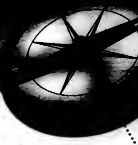

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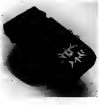
# MORE COOL STUFF

CONTINUED FROM PAGE 106



## SNAPPY

Snappy is an inexpensive way to bring images to your intranet pages *Play, Inc*'s (**www.play.com**) Snappy plugs in to the printer port of your PC and has easy-to-use editing software It only captures single-image frames But for **$200**, you can't complain —J B

## WIZZARD PINBALL CONTROLLER

*ThrustMaster, Inc.*'s (**www.thrustmaster.com**) package entertained me a lot longer than I'm sure my editor wanted, and there's no way to pretend you're working The **39.95** package is DOS-based so you can't Alt-Tab to your spreadsheet — and even if you could, how do you explain those blue flippers mounted to your keyboard? — K B

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## NEWS CATCHER/ AIRMEDIA LIVE

Why is it shaped like a pyramid? One marketing manager says, "It looks cool " *AirMedia* provides the information feed via a pager-style broadcast network *Global Village Communication, Inc.* (**www.globalvillage.com**) provides the News Catcher, the pyramid-shaped desktop receiver The receiver and one year of basic service cost **$149** (**$24.95 per year thereafter**) —J C

## LIL' WOODY!

"Lil' Woody," stylish mouse or insult to manhood? Both, actually, but it's the mouse we're talking about here. Bothell, Wash.-based *Bourn Enterprises'* mice (**$79.99 each**) are handcrafted from a variety of exotic hardwoods and function as typical two-button mice. They're perfect for a home office or to accent a mahogany desk, but on typical office furniture like my muted gray desk — sorry —K B

## VIRTUAL I-GLASSES!

Once you get your bearings, this product (**$399** for video games and **$499** for computers) offers substantial entertainment — if you're into escapism Not being video game connoisseurs ourselves, we rarely knew what we were doing, which resulted in some random shootings and untimely deaths. But we got lured in by the bass-driven music, the imagery and the effects of our head movements and keyboard maneuvers. The IS angle for the *Virtual I.O., Inc* (**www.vio.com**) headset? You look like a technogeek, so you might be able to convince your boss you're doing some cutting-edge work. — A M. and C G.

## VIRTUAL VEHICLE JD

Designed by computer and racing enthusiasts, this **$1,295** Virtual Vehicle simulator from *Interactive I/O, Inc.* (**www.interactivelo.com**) immerses the user in the fast-moving world of interactive computer games. The IS angle: I just dare you to get your boss to sign off on this one. — C.G.

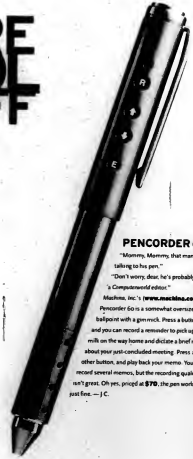
# MORE COOL STUFF

## CARDSCAN PLUS 300

This is a keeper. Within 15 minutes, 75 business cards stacked on my desk were passed through *Corex Technologies Corp.*'s (**www.cardscan.com**) 5- by 6-in. scanner. A click of the OK button, and the optical character recognition software went to work while I went to lunch. The scanner costs **$299**. — K.B.

## PHANTOM HAPTIC INTERFACE

*SensAble Technologies, Inc.s'* (**www.sensable.com**) Phantom Haptic Interface (**$17,000 to $70,000**) and Ghost software (**$500 to $1,000**) incorporate touch in the human/computer interaction. Beware. Your brain is tricked into thinking it's actually performing brain surgery, carving into clay or moving heavy geometric objects, which may result in "simulation sickness." — A.M., C.G.



## PENCORDER 60

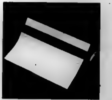
"Mommy, Mommy, that man's talking to his pen."

"Don't worry, dear, he's probably just a *Computerworld* editor."

*Machina, Inc.*'s (**www.machina.com**) Pencorder 60 is a somewhat oversized ballpoint with a gimmick. Press a button, and you can record a reminder to pick up milk on the way home and dictate a brief note about your just-concluded meeting. Press another button, and play back your memo. You can record several memos, but the recording quality isn't great. Oh yes, priced at **$70**, the pen works just fine. — J.C.

## TITANIC

When playing the Titanic (**$59.99**), you are a British secret agent on a mission that never was completely understood by *Computerworld* game players. We played about three hours, and according to game documentation, we could have spent up to 27 hours more on the Titanic from Cyberflix, Inc. (www.im.gte.com). — C.G., A.M., K.B.



## PENTAX POCKETJET

'Fess up. There are occasions when you really do wish you had a printer right there in the hotel room. The 10-in. by 2-in. **$449** PocketJet from *Pentax Technologies Corp.* (**www.pentaxtech.com**) may be just what you need. It's good for basic printing for tasks such as sales proposals. — J.C.

**The cool games and gadgets in this Buyers' Guide were reviewed by the following *Computerworld* staff: Jose Bruzual, Kevin Burden, Jim Connolly, Stewart Deck, Cathy Gagne, Paul Gillin, Laura Hunt, Tom Lamoureux, Amy Malloy and Tim Ouellette.**

**Custom photography by Steven Greenberg**

**Illustration by Jack Harris**

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# DIRECTORY *of* 1996 IN DEPTH STORIES

### JANUARY

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In Depth
the exchanging of the guard

In Depth
INTERNET INSECURITY

In Depth
Public Key Mystery

In Depth
BIG BLUE

For information on any of these stories, contact Steve Ulfelder, *Computerworld*'s senior editor, In Depth. His Internet address is steve_ulfelder@cw.com.

**IS academic experts Eli Cohen and Elizabeth Boyd share their observations on IS education abroad this week at www.computerworld.com**

# MAINFRAME MISFORTUNES

THEY'RE THE LEGACY SKILLS NOBODY WANTS TO LEARN, AND THAT'S CREATING A GAP BETWEEN SUPPLY AND DEMAND

By William Spain

### DB2: NOT FOR THIS GENERATION, THANK YOU!

Call it "the graying of the mainframe." As the big systems of yesterday get older, they increasingly are relying on the same core of skilled people who grew up with them. And as many in that group redirect their attention to newer technologies, fewer people are learning the skills necessary to replace them, leading to a talent crunch.

"Younger people see the DB2 mainframe systems as archaic and old-world. When you think DB2, you think big iron. That may not be the case anymore, but that's the reputation," says Eric Warner, chief operations officer at Greenbrier & Russel, Inc., a consultancy in Schaumburg, Ill.

In addition, many people who spent a lot of time learning mainframe skills when those skills were hot are no longer available, Warner says. In an attempt to keep current in technology and pay scale, "a lot of them have been converted over to client/server, and they don't really want to go back," he says.

The relative dearth of new DB2 talent coming up through the ranks — and the defection of some old-line managers — might not be a big problem for information systems employers if the technology were being widely scrapped. But as Warner points out, the number of requirements hasn't dropped significantly over the past few years. Adding to the problem, he says, is that "in general, people are on board paying more for client/server. They haven't admitted they need to pay more for [mainframe skills]." However, with the steady drop in supply of skilled DB2 people, he says, "they are going to have to pay more once they start feeling the pain."

Complete Business Solutions, Inc. (CBSI) is another company having a hard time filling its DB2 needs, according to Nanjappa Venugopal, director of human resources at the consulting and training firm in Farmington Hills, Mich. "We used to talk about getting quality vs. quantity, [but] you don't even have the quantity these days. Everyone is all tied up with the client/server hype."

Everyone, that is, with the possible exception of CBSI's customer base, along with hundreds of other large IS employers in a variety of industries.

Particularly hot for DB2 right now, Venugopal says, are manufacturing, retail and "of course, insurance and financial services are all still mainframe- and DB2-based."

"Corporate America has invested so much money in DB2 that until such time that client/server is providing the security and stability — the comfort level they need — the demand is going to remain for some time — another 20 to 30 years at least," Venugopal said.

### MVS: A HOT SKILL GETS THE COLD SHOULDER

For some IS shops, the big problem may be finding people conversant enough in the latest and greatest technologies to meet developing information challenges. In at least one industry — financial services — getting sufficient personnel to maintain those monster mainframes is growing more difficult by the day. And no skill set is more in demand than MVS.

The problem is similar to that experienced by DB2 outfits: not enough new people. As Mike Pixley, a technical recruiter at Principal Financial Group in Des Moines, Iowa, explains, "Everyone wants to get into client/server. They see [MVS] as older, and they are afraid they will get pigeonholed or left behind."

Although there may be some validity to that fear, Pixley points out that "mainframes aren't going away anytime soon. It runs the core of our business. We are gradually moving into client/server, but it's going to be a number of years before we leave mainframes behind — if ever. There is just so much time and money already invested, it will take a tremendous effort."

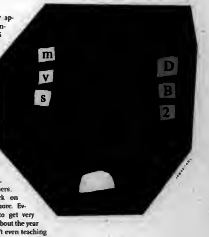
Principal Financial is far from meeting all its MVS needs, Pixley says. That is leading to frequent increases in pay scales. In addition, headhunters are becoming an ever-increasing problem. "We are raided here all the time. It's an ongoing battle from both sides. We are constantly looking for things to keep and attract the good, strong candidates."

The shortage is so dire that even potential poachers often walk away with an empty sack.

"The demand for applications programmers that know MVS is very strong right now. There is an acute shortage; I have hundreds of openings," says Richard Wonder, president of Richard Wonder & Associates, a recruiter in New York.

The reasons for that, Wonder says, are threefold. "Most programmers don't want to work on these systems anymore. Everyone is starting to get very paranoid and upset about the year 2000. Colleges aren't even teaching it anymore." At the same time, he says, "With all the talk about client/server, they are still shipping more mainframes than ever."

Wonder says the current MVS candidate pool is largely made up of older U.S. programmers and talent recruited from overseas, mostly from Asia. And there just aren't enough of either, leading to increasing compensation levels for those with MVS skills, he says. "You find me a good mainframe application developer who is articulate, [and] I can get him $80,000."



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*Spain is a freelance writer in Chicago.*

### ONLINE RESOURCES

**RON RABE'S DB2 PAGE**
www.webcom.com/raberd/jobs.html
Contains technical information and links to various online employment resources, including DB2 opportunities.

**INTERNATIONAL DB2 USERS GROUP**
www.idug.org/career_center/
Contains listings for DB2 jobs from various employers and recruiters.

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## Database Analysts

Will work with multiple processing platforms, including mainframe, client server and massive parallel processors. Industrial strength DBMS are required for managing terabytes of information, including Fastpath, DLI, DB2, SYBASE and DB2-6000. **Job Code: 66074CWMN**

## Senior Software Specialist

Responsible for IMS/DB2 system software support, primarily in the areas of problem determination, change implementation, and support application development projects. Will prepare and maintain documentation for problem resolution and departmental procedures. Requires a minimum of five years experience installing, maintaining and supporting IMS and DB2 systems software. Experience with IMS/DC, DB2 systems and/or DB2/IMS database support. **Job Code: 68673CWMN**

## Programmer Analyst

Will provide technical support for the worldwide production of a travel, finance and MIS data capture system; coordinate changes to internal custom code and downstream systems; manage priorities to roll fixes and enhancements into a production environment; and develop custom build requirements for markets that are in production. Requires a minimum of three years RPG/400 experience; the ability to use structured development methodology, preferably Method/1; and strong project management/planning skills with Microsoft Project or related package.
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☐Portland jobs-or@cotl com
Fax (503) 641-5348 PH (503) 626-8819

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# REGIONAL SCOPE

## *Southern Florida, the Caribbean and Hawaii*

# SPOTS

## IS pros can easily be blind to job realities in vacation meccas. There are jobs to be had, but tourists aren't always welcome.

*By William Spain*

*Although bright sunlight may not be compatible with the stereotype of the pale information systems professional trapped in a windowless cubicle day after day, people use computers in warmer climes, too. So if you're someone who would rather skip across sand than trudge through slush after a week of hammering out code, there are several places where you can do that.*

### SOUTHERN FLORIDA

This area is definitely not the "Sleepy South." The economy is robust and diversified, and the population is growing fast — factors that lead to a strong market for IS professionals, employers say.

"We have a demand for skills across the whole IS spectrum," says Robert Tabb, vice president of IS at Miami-based transportation giant Ryder System, Inc. "We need network specialists, experienced [database administrator] types and [people] who have an understanding of client/server.'"

Topping Tabb's wish list are "strong client/server development skills, relational database specialists and network support and configuration people." Ryder, he says, is having a difficult time meeting its IS needs.

Tabb says one of the problems is that, with a few exceptions, Southern Florida businesses tend to be smaller than elsewhere. "There are lots of very small shops. . . . It's not really a mecca for technical people, and you don't have a big talent pool" as a result.

M. Lewis Temares, vice president, chief information officer and dean of the College of Engineering at the University of Miami, agrees that local IS departments are going begging for a wide variety of skills.

"It's a good economy. There are more jobs even than there are people to train for them. I have more [IS] management jobs than resumes," he says.

Particularly hot in the market, Temares says, are networking skills, software engineering, Oracle Corp. and PeopleSoft, Inc. skills.

### THE CARIBBEAN

People who look for work in the emerging economies of the Caribbean basin had better have a variety of skill sets, says Enrique J. Lopez, president of AKL Group, Inc., an information technology consulting firm in Coral Gables, Fla.

"Basically, what you are finding in the Caribbean is a great need for jacks-of-all-trades," says Lopez, whose firm does about half its business in the region.

That shouldn't be surprising. After all, Lopez says, this is a "confusing mish-mash" of cultures, countries and business climates. The economies of the region range from the well-developed, such as Barbados and Puerto Rico, to the rudimentary and often impoverished, such as Haiti and the Dominican Republic.

The language of business also varies. Spanish, English and French are all spoken in the area.

And virtually all the nations of the region need at least some outside help to develop their information infrastructures. But because of issues of "nationalism and culture," Lopez says, full-time permanent staff positions are few and far between.

American IS personnel, Lopez says, "most likely will be accepted as consultants. They will be welcomed but very limited in terms of opportunities."

Jorge Prats, senior vice president and director of IT at Marti, Flores, Prieto & Wachtel, an advertising agency in San Juan, Puerto Rico, says IS needs in his market include networking and Internet skills, along with Sybase, Inc., Informix Corp., Powersoft Corp.'s PowerBuilder and Oracle skills. Industries that are hiring on the island include banking, manufacturing and communications. However, he adds, "We have a very good offering of local people."

### HAWAII

In theory, an IS person who wants to relocate to Hawaii should face none of the cultural barriers found in the Caribbean or other foreign markets. And in practice, the 49th state has many of the same IS needs as the rest of the country.

But "what we are looking for are people who are willing to live here" and not just pop over for a year or two, says Thomas Wrenn, manager of information services at Hawaiian Electric Co.

Hawaii offers a lot of advantages, such as "a relaxed atmosphere, the sun and year-round water sports," Wrenn says. But he cautions that mainlanders will have to adjust to "a much smaller community and a high cost of living. And we don't pay the real high salaries."

That said, "there's always a need for fresh talent, for people who make things happen," Wrenn says. That applies to a variety of disciplines. "Today, more and more, we are looking for well-rounded people, not just superexperts. Because of the small size of our companies, an Internet specialist has to be a LAN and database specialist all rolled into one."

*Spain is a freelance writer in Chicago.*

### WHAT ARE THEY PAYING?

**Average IS salaries in Southern Florida and Hawaii (figures for the Caribbean not available):**

| | |
|---|---|
| **TOP IS MANAGEMENT** | |
| CIO/vice president | $126,000 |
| Director of networks | $87,000 |
| **NETWORKS** | |
| LAN manager | $52,000 |
| Network administrator | $48,000 |
| **SYSTEM'S DEVELOPMENT INTEGRATION** | |
| Mainframe project manager | $63,000 |
| Senior systems programmer | $54,000 |
| Database analyst | $46,000 |
| Programmer/analyst | $39,000 |
| **PC END-USER SUPPORT** | |
| Technical support specialist | $34,000 |
| Help desk operator | $28,000 |

Source: Computerworld's 1996 Annual Salary Survey

### ONLINE RESOURCES

**SOUTHERN FLORIDA**

**Feefree**
www.feefree.com
A searchable database of IS jobs in Southern Florida and resume-posting service.

**Professional Resources, Inc.**
www.floridajobs.com
A searchable database of jobs in Southern Florida and list of corporations that seek IS personnel.

**HAWAII**

**Hawaii Careers**
www.lava.net/~kbucar/career.htm
Contains job postings from private- and public-sector employers, other employment-related information and advice.

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# Programme Analyst

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**EDUCATION:**
4 year degree in area of computer science, MIS or related field.

**ADDITIONAL INFORMATION/SPECIAL SKILLS:**
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You will need 2+ years experience with Windows95 and OS/2 (Windows NT a plus) and experience with installations, configurations, upgrades, repairs and general maintenance.

## Systems Analysts

You will need 3+ years experience in any or all of the following: IMS, COBOL, IBM/MVS/JCL, TSO/ISPF, Easytrieve Plus, Endeavor, UNIX operating system, Micro Focus, VSAM, DB2. Excellent project management and analytical skills also necessary.

## Network/Telecommunications Technicians

You will need 1+ years experience with a basic understanding of voice/data/LAN technologies and familiarity with wiring standards.

## Network Telecommunications Sr. Analyst

You will need 3+ years experience with an in-depth knowledge of voice/data/LAN technologies and familiarity with all network protocols, bridges, routers, gateways, hubs and PBX technologies.

## Sr. Network Analysts

You will need 3+ years experience with in-depth knowledge of Microsoft Windows NT workstation/server technologies or providing internet solutions. Experience in designing and implementing disbursed NT solutions or internet technologies to meet business needs also necessary. Responsible for coordinating the efforts of various groups to establish and document standards, creating a support infrastructure and assisting in the development and delivery of training to support staff and customers.

## Security Systems Analyst

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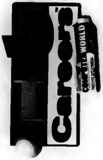

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# DIRECTOR INFORMATION SERVICES

**Penford Products Company**, a leading manufacturer of specialty carbohydrates is seeking a highly skilled Director of Information Services to join their management team in Cedar Rapids, IA. The successful candidate will implement and sustain systems, networks and applications initiated by the corporate technology group, and will lead the IS organization and their clients to achieve key strategic objectives. The current LAN is on Novell, and will migrate to a WAN with UNIX Sun Solaris operating system with Informix database and Baan ERP applications. Additional software will be integrated with Baan to support plant maintenance, environmental health, and human resources. This position does not require a technologist, but experience with UNIX is a plus. Leadership skills with technical and business process understanding is required.

Penford Products offers the advantages of our Cedar Rapids location—an excellent family environment, with a great school system and a friendly lifestyle to match. For an exciting new career opportunity in 1997, please submit your resume to: **HR Recruiter, Penford Products, Box 428, Cedar Rapids, IA 52406-0428.** EOE.

Penford Products Co.

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# We'd Like To Add Your Name To Our List

**Direct Marketing Technology**, a leader in the direct mail industry, provides customized databases and statistical modeling to a variety of clients. Our expertise in narrowing target groups and improving our clients' circulation has earned us a reputation that is unmatched by our competitors. Due to recent expansion, we seek innovative individuals to add to our list of success stories.

## Database Analysts

Using flat file and complex relational database design, you will develop, implement and maintain processing systems. Additionally, you will validate, update, document and oversee the reporting of assigned databases. Qualifications include a degree and a minimum of 2 years experience of mainframe programming/analysis and DB2.

Our list of opportunities keeps on growing. We offer a competitive salary and industry-leading benefits including medical/dental/life insurance, 401(k), tuition reimbursement, paid vacations/holidays, employee assistance, company sponsored employee activities and more in a casual dress environment. For consideration, mail/fax resume, indicating position of interest, to: **Direct Marketing Technology, Attn: HR-CW114, 955 American Lane, Schaumburg, IL 60173. FAX: (847) 517-5988.** Equal Opportunity Employer M/F/D/V

DIRECT MARKETING TECHNOLOGY, INC.

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SAP CONSULTANT (APPLICATION SYSTEMS ANALYST LEAD) - Oakbrook Terrace, Illinois: Lead lower level consultants in developing, integrating & configuring SAP (Systems Applications & Products in Data Processing) modular computer software system utilizing in-depth business knowledge of the chemical industry. Work directly w/client functional experts. Ensure proper integration of complex multiple functional areas including materials management & costing software & manage on the spot integration issues. Define & execute portions of work plan as see fit. Propose possible business opportunities. Mentor & instruct lower level systems analysts. Design & configure complex business gap interfaces. Bachelors Degree in Comp. Science, Info Technology, Math, or Engineering required. Must have 2 years exp in job offered or 2 yrs. related exp as SAP Consultant or Analyst. The 2 yrs must incl. costing & materials management software in the chemical industry. $78,000/yr., 40 hrs/wk, 9:00-5:00. Must be willing to relocate to worksites w/in the Mid-Western Region. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume & cover to (No calls) to: Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, Illinois 60605, Attn: Len Boksa. Reference #V-IL 15268-B. This is an employer paid ad.

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Computer Network Engineer - Administration, configuration & design of Domain Name Servers. Design & administration of Routers, Bridges and Gateways. Analyze, design and develop real-time software for TCP/IP network administration & support using C, C++, Fortran, Pascal, Basic, Assembly and PDP & Microprocessors on a heterogeneous network of UNIX, DOS, VAX/VMS, OS/2, AIX & HP UNIX. Provide administration, maintenance and support for TCP/IP protocols on an enterprise network environment. Bachelor's in Computer Science or Electrical Engineering. 2 years experience as Computer Network Engineer or Network Systems Analyst which must include at least one year experience in electrical & electronics circuit design. C, C++, Fortran, Pascal, Basic, Assembly and PDP & Microprocessors on a heterogeneous network of UNIX, DOS, VAX/VMS, OS/2, AIX and HP UNIX. 40 hrs/wk. 8-4. $48,237/yr. Employer paid ad. Send resumes to 7310 Woodward Ave. Rm 415, Detroit, MI 48202. Refer to #120896.

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Database Analyst: Designs and develops graphic user interfaces using Microsoft Visual Basic to implement relational database management information system used for corporate wide business applications. Modifies Microsoft Access database system access protocols and data pathways to insure integrity of data which is installed in a networked Local Area Network environment installed in a Windows NT operating system. Performs systems testing of data integrity using Visual C++. Requires Master's degree in Computer Science or Management Information Systems. Also requires six months experience in the job to be performed or six months experience as a Software Engineer. If experience in related field, entire experience must include performance of all duties specified in job offered. Must have proof of legal authority to work permanently in the U.S. 40 hours per week, 9:00 a.m. to 5:00 p.m. Salary: $40,000.00 per year. Please send resume to: Chuck Zachow, Manager, Administration, FIPSCO Inc., 1090 Executive Way, Des Plaines, Illinois 60018. No calls.

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☑ growth
☑ diversification

Blue Cross and Blue Shield of Kansas City is an integrated health care company serving the Kansas and Missouri areas. We are the region's largest integrated source of health care financing, delivery, and managed benefits and services.

Our growth and diversification have created the need for several opportunities in our Information Systems Division.

**MVS/ESA Network System Programmer** - Candidates will work in all phases of development and maintenance of our IBM MVS/ESA systems. We require 6+ years experience in a MVS/ESA system environment as well as experience with IMS and DB2. VTAM, NCP and CICS experience a plus.

**Database Analyst** - Candidates will have heavy DB2 and IMS utilities experience as well as specification of operational tailoring parameters. The individual should also possess experience with performance monitoring of the DBMS as well as monitoring applications. A strong working knowledge of DASD management is required. Familiarity with IEF/Composer, Oracle, or other mid-range RDMS would be a plus.

BCBSKC offers excellent compensation and benefits. For consideration, please send your resume to:

**Human Resources - 33**
**P.O. Box 419169, Kansas City, MO 64141-6169 EOE**

**Blue Cross Blue Shield of Kansas City**

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At least exp openings exist for Engineering Application Software Designer for Engineering Consulting & Software Development firm. Duties include: Develop software for engineering applications, (specifically internal combustion and diesel engine performance) project specific functions utilizing PV-WAVE scientific visualization software, "C" Language, UNIX computer operating systems, scientific visualization software, Graphical User Interfaces (GUI) for data analysis software, and Engine Map Optimization software for steady state and transient emissions to minimize smoke and nitrogen oxides for conformance with EPA standards. Provide software support for engine development data analysis in the areas of data acquisitions, rotating machinery, transient emissions and steady state emissions. Assist in processing software requests from exp engineers and analysts to prepare new engineering applications. Requires a Masters Degree in Computer Science. Experience must include software engineering applications for internal combustion through research or advanced coursework, to the following: - Advanced Numerical Analysis, - Data Structures and Algorithms, - Applied Thermodynamics. Requires six months experience in the job offered or as a Programmer Analyst and to include experience of UNIX and "C" Language computer operating systems, scientific visualization software and software programming, Xwindows/Motif software, and development of Graphical User Interfaces. Salary is $40,800.00 per year. Hours are 8:00 am to 5:00 pm, forty per week. Must have proof of legal authority to work permanently in the United States. Send resume to Illinois Department of Employment Security, 401 South State Street, 3 South, Chicago, IL 60605. Attn. Sheila Lindsey. Ref #V-IL 15610-L. No Calls. An Employer Paid Ad. Send 2 Copies of Both Resume & Cover Letter.

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Senior Programmer/Analyst (Variable job sites throughout U.S.A.) Design, dev., implementation & testing of financial & administrative software in SAPIENS under CICS & DB2. On-line & batch program design, dev & team leadership in COBOL & SAPIENS. $83,000/yr. Req. Bachelor's in Comp. Sci., Math or technical discipline & minimum of 1 yr. exp. in job duties & willingness to relocate at employer's expense to variable job sites at 6 months to 1 yr. interval throughout U.S. Send resume in dupl. to Linda Quinn, Interactive Business Systems Inc., 5520 LBJ Freeway, Suite #150, Dallas, TX 75240

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Programmer/Analyst (2 Positions) (Various job sites in Dallas/Ft. Worth, TX area, U.S.A.) Analysis, design & programming of client customized administrative applications software under UNIX & X (MOTIF) WINDOWS operating systems in C language under ORACLE database. 2 yrs exp. in job offered. $50,000/yr., M-F, 9-5, 35 hrs wk. Apply at the Texas Workforce Commission, Dallas, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. J.O. #TX 7856956. Ad paid by an equal opportunity employer.

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http://careers.computerworld.com

Careers

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PROGRAMMER/ANALYST
Design, implement and maintain hospital software projects under Microsoft Windows NT environment using C, object oriented programming language C++, Visual Basic, and CM (Configuration Management) tools. Process HL7 (Health Level 7) messages under client/server architecture with Remote Procedure Call. Require: Master's degree in Computer Science and completion of one graduate course each in Computer Algorithms, Computer Organization, Operating Systems, and one course covering Object Oriented Programming Language C++. $40,000/yr. 40hrs/wk, 8:30-5:30. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both Resume, Cover Letter and Transcript, and proof of coursework on C++ to: Illinois Dept. of Employment Security, 401 S. State St., 3 South, Chicago, IL 60605, ATTN: Dennis Jones, Ref #V-IL-16023-D. An Employer Paid Ad. No Calls.

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Computer Application Engineer. Develop an Engineering plotting s/w package on a multiple workstation platforms environment; use X window/Motif, Xlib & C to implement user interface, Yacc & Flex to design a command language thru syntax & semantics analyses, XGKS & OpenGL to plot 2D, 3D & 4D graphs; import & export HDF, IM, CSV & Postscript files; implement abilities to show Adobe & Hershey fonts & graphs from Postscript format files on screen & plot them interactively; support s/w's networking (client-server) version by RPC & TCP/IP; maintain system by image & RCS. Req: MS in computer sci. 2yr exp in job offered or related as s/w eng.; related exp include using X window/Motif, Xlib, XGKS, RCS, Yacc; designing language to implement syntax & semantic analyses. 40hr/wk, 8-5pm, $808/wk. Send resumes to 7310 Woodward Ave. Rm 415, Detroit, MI 48202. Ref No 140296. Employer paid ad.

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**SYSCO CORPORATION**, the nation's largest foodservice distribution company has opportunities in our corporate headquarters located in Houston, TX for highly motivated individuals. Our industry leadership is based on our service and systems and our environment will allow you to expand technical knowledge and experience across multiple systems and platforms. If you thrive on challenge and multitasking responsibilities, we have the following opportunities for you:

## MVS & Sr. MVS Programmer Analysts

Minimum 3-5 plus years current experience with COBOL, CICS, & DB2.

Send/fax resumes with salary history and requirements to SYSCO HR-[illegible], 1390 Enclave Parkway, Houston, TX 77077, fax: (713) 584-[illegible] or via Internet: [illegible]

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## For Peritus, Year 2000 is just the beginning...

Peritus Software Services, Inc. is a rapidly growing privately held company with the #1 automated Year 2000 conversion technology licensed by most of the major service providers. Our international base and impressive customer list are evidence that Peritus is a key player in the Year 2000 marketplace. Better yet, the application of our technology extends well beyond Year 2000 by setting the standard for maintaining software in the new millennium.

Peritus is developing innovative software tools for use in automated logic extraction, software test generation, and mass change renovations. This is your opportunity to work with leading edge technologies including Client/Server, GUI design and Delphi. Our openings require a BSCS, 3+ years' experience and the following:

**TECHNICAL CONSULTANTS - SCHAUMBURG, IL AND BILLERICA, MA**
COBOL programming (MVS), systems analysis, IBM mainframe, JCL, CICS, IMS/DC, IMS/DB, DB2. Some travel required.

**NETWORK/SYSTEMS ADMINISTRATOR - SCHAUMBURG, IL**
SunOS, Solaris, IBM AIX, HP UX, Windows 95, TCP/IP networking. Also NetBeui, shell scripting, Perl, sendmail, MS Mail, C/C++, DNS, NFS, NIS.

**SOFTWARE ENGINEER/SR. SOFTWARE ENGINEERS - SCHAUMBURG, IL**
C/C++, UNIX shell, compiler construction tools, DB2 or MSCS in lieu of experience. Sr level requires 5+ years' (or MSCS and 3+ years') programming, plus CLIPS or rule-based systems development.

***Other opportunities in Billerica, MA include:***

- Project Leaders
- Marketing Specialist
- Webmaster

**Respond with resume to: Human Resources, Dept. CW, 304 Concord Road, Billerica, MA 01821-3485; Fax: (508) 670-1173; e-mail: resume@peritus.com; Home pg: www.peritus.com. We are an Equal Opportunity/Affirmative Action Employer.**

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## AFFINITY FEDERAL CREDIT UNION,

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## SYSTEMS SUPPORT MANAGER

*Requirements*

- B.S. in Computer Science or related work experience
- 5 years programming and/or systems analysis experience in financial institution online systems
- 3 years supervisory experience
- Oracle/Lotus Notes/Visual Basic/Reflections/Access
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**—awaits you at Blue Cross and Blue Shield of South Carolina.**

We are accepting resumes/applications for several positions.

**ENDEVOR ADMINISTRATOR**

Strong (5+ years) experience as an Endevor/MVS Administrator. Extensive experience with creating and maintaining processors, processor groups, ESSR, user and system exits. We also require excellent communication skills and good customer service skills. Must possess the ability to lead/manage projects and meetings.

**CICS/DC SUPPORT**

Strong (5+ years) experience developing, testing and debugging mainframe CICS applications. Heavy experience with MVS/COBOL II and CICS V2.2+. Good communications skills and excellent customer service skills. We prefer a background in customer/help desk support.

Send or fax your resume to: I/S Recruiting,
Blue Cross and Blue Shield of South Carolina,
I-20 East @ Alpine Road, Columbia, SC 29219.
Fax: (803) 699-8688. EEO/M/F/H/V

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Sr Programmer Analyst - Analyze clients business requirements. Liaise with end-users regarding business requirements, preparation of business & technical specs, testing plans & implementation plans. Maintain & enhance existing batch & on-line software programs. Write new batch & on line software programs. Use of IBM 3090, IBM PC, MVS/XA, JES2, IMS/DB/DC, IDCAMS, VSAM, COBOL2, TSO ISPF/PDF, CLISTS, DIALOG MANAGER, MICROFOCUS COBOL WORKBENCH/ANIMATOR, EXPEDITER, MS WORD. MUST HAVE: Bachelor's in Comp. Sci., Engineering or Math. 2 yrs exp. in job offered or 2 yrs exp. as Programmer Analyst or Systems Analyst. Exp. must involve all above hardware & software. Bachelor's may be substituted with 81 credits in Comp. Sci. & 1 additional yr of exp. $48K. 9-5, 40 hrs/wk. Job Location: Tallahassee, FL. Submit resume to Dept. of Labor/Bureau of Operations, 1320 Executive Center Dr., Atkins Rm. 244, Tallahassee, FL 32399-0667. Ref. Job Order #FL-1525088.

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## PROGRAMMER/ SYSTEMS ANALYST

*Must have at least 5 years experience in an educational environment using "Access" for the purpose of designing, developing, programming and implementing administrative systems for educational institutions, networking departments of Admissions, Registrar, Bursar and Financial Aid. Familiarity with Novell network and PC environment required. Resumes should be sent to: Dr. Robert Ross*

***ROSS UNIVERSITY***
***460 West 34th Street***
***New York, NY 10001***

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Software Engineer. Dev., test, document financial reporting system computer software in APL on IBM mainframe and LAN configured PCs. Dev., maintain periodic reporting APL systems/MIS Research, upgrade APL system. Detect, modify syntax/logic errors. Analyze, review, alter programs to increase operating efficiency/adapt to new req., document software dev. logic, coding corrections. Provide tech. assistance on software and application dev. Apply knowledge of APL in mainframe & networked PCs inc. STSC (Manugistics APL), APL 2 (IBM), APL II & APL III, IBM DOS/MVS JCL, EASYTRIEVE, DOS, Windows, OS/2, Excel, Word for Windows & utility packages for DOS, Windows & OS/2 in mathematical modeling, forecasting, sales, marketing, corporate strategy, corporate accounting, human resources, scheduling, planning, costing, financial apps. Req: Master's in Engineering + 4 yrs. exp. $58,000/yr. 40hrs. 8:30am-5pm. Submit resume to Job Service of Florida, 701 SW 27th Ave., Rm 47, Miami, FL 33135-3014. Re: job order # - FL 1529408

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**SYSTEM ANALYST** to provide on-and computer consultancy services to design, develop, analyze, test, implement and document client/server applications using Informix-4GL 7.11, SQL, RDBMS on UNIX platforms, data conversion to Informix RDBMS, perform TCP/IP based network systems configuration and administration, database optimization and concurrent processing design. Require A.S. in Computer Programming and two years experience in the described job duties or as Programmer/Analyst/System Administrator. 40% travel to customer sites within the United States required. Experience must include applications development with Informix 4GL and SQL on UNIX. Salary $42,000 per year, 8 am to 5 pm, M-F. Send resume in duplicate to Georgia Department of Labor, Job Order # GA 6050586, 1535 Atkinson Road, Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service office.

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Systems Analyst, Tampa, Florida. Design, analyze, develop and test network management and analysis applications. Software is developed on various UNIX platforms, IRIX and AIX. Use Object Oriented methodology for design and analysis. Program in C++ with USL class library and develop GUI using OSF/Motif, Xdesigner in UNIX environment. Generate graphs and table using S language and fol for presentation and analysis. Load data from IBM format 3480 compressed tapes to UNIX flat files using TTU and C processing modules. Use Lex & Yacc and xldb for application development. Reqd. Masters in Computer Science. 1 year exp. in job offered or 1 year exp. as Programmer Analyst. 40hr/wk, 9am-6pm. $50,400/yr. Submit Resume to Job Service of Florida, 2312 Gulf-To-Bay Blvd, PO Box C, Clearwater, FL 34618-4090. JOB ORDER NUMBER FL1528506

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**Programmer/Analyst (Varying client job sites in Metro Miami, Fl) Design, dev & implement customer specific financial application software in COBOL & WANG COBOL using WANG procedure language on WANG hardware under UNIX O/S. 2 yrs. exp. in job offered. $40,000/yr. 40 hrs wk., 9-5, M-F. Submit resume to: Job Service of Florida, 701 SW 27th Ave., Room 47, Miami, FL 33135-3014. Re: Job order number FL-1516559**

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System Analyst, Sarasota, FL. Coordinate software & hardware installation, maintenance, repair & technical support, design & develop client/server systems & network integration, design customized & integrate computer aided design software package & interface with end-users. 37.5 hrs./wk. salary $48/yr. requirements: M.S. in computer science. 1 year exp in job offered or as a system programmer, and experience must include ASSEMBLER, SQL, SUN SPARC WORKSTATION, VAX-11/780 & main board design. Send resume to: Job Service of Florida, 2312 Gulf-To-Bay Blvd., PO Box C, Clearwater, FL 34618-4090. Re: Job offer number FL 1528211

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Systems Analyst/Project Manager. Oversees all aspects of projects to automate processes or improve existing systems for large commercial data processors. Must have B.S. in Computer Science or Engineering and two years experience in job offered. 48-55 hours/week. $40.00/hour. Send resume to: Job Service of Florida, 2312 Gulf-to-Bay Blvd., PO Box C, Clearwater FL 34618-4090. Job Order No FL-1532678

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Software Engineer. Responsible for design and coding of C++ and Visual C++ applications related to communication systems including networks, faxservers and messaging/middleware. Requirements include a Bachelor's Degree in Computer Science or related field with at least two years of experience in job offered or related field of Application Development. Thorough knowledge of Visual C++ using Microsoft Foundation Class, UNIX, VBX, SQL and Novell networks. Applicants must have unrestricted authorization to work in the United States. Salary $36,500/year. Monday - Friday 40 hours/wk. Submit resume to Job Service of Florida, 2660 West Oakland Park Blvd., Fort Lauderdale, FL 33311-1347. Re: job order number FL 1528884

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SENIOR SOFTWARE ENGINEER. Extensive knowledge of design, development of Natural Language Processing Systems; Working knowledge in RAMBAUGH, BOOCH Object Oriented Design methodologies. Design and development of Geographical Information Systems. Proven ability to work with C, C++ on UNIX/SOLARIS and visual C++ Windows programming on Windows-NT platforms and SYBASE. The duties include: Design, development of Natural Languages front ends for Business Database Systems. Requires Masters in Computers or Science with 3.8 Yrs of experience in Software development. 40 hr per week at $50,000/per year. Please send resume to Case # 61209, PO Box # 8968, Boston, MA 02114

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Programmer Analyst, Silver Spring, MD: Design, develop and implement computer applications using Object Oriented 4GL and tools both in GUI and Character Mode interface computer applications with UNIX, DOS, Windows NT & OS/2. Perform Trouble Shooting. Req'd: Masters in Computer Science/Engineering. 1 year exp in job offered to include Network programming, Power Builder, Visual Basic, Jam, Sybase, Oracle, Informix, C, C++, Base Methodology. 40 hrs/wk, 8am-5pm Mon-Fri. $50,000/Year. Mail two copies of resume and copy of ad to: Department of Labor, Licensing and Regulation, 1100 North Eutaw Street, Room #212, Baltimore, MD 21201. Job Order No. 9677295

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COMPUTER PROGRAMMER ANALYST I to design, develop and implement client/server database system using Delphi and SQL server, maintain mainframe databases using CSP, DB2 and JCL, migrate mainframe databases to client/server databases using Microsoft Access. Require B.S. in Computer Science and one year experience in the described job duties or as Computer Programmer. Salary $24,856 per year, 8 am to 4:30 pm, M-F. Mail resume in duplicate to Dept. of Labor/Bureau of Operations, 1320 Exec. Ctr. Dr., Atkins Rm 244, Tallahassee, FL 32399-0667. Re: J.O. Number FL-1529237

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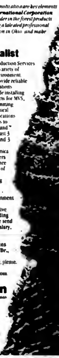
*Employee involvement and team motivation are key elements of our success at* ***Champion International Corporation****. A Fortune 300 company and a leader in the forest products industry, we are currently seeking a talented professional to join us in the following position in Ohio and make a lasting impression.*

## Technical Specialist

In this position within our IT Production Services organization, you will support a variety of software products in an MVS environment, contributing to our mission to provide reliable environments for business applications. Specific responsibilities will include installing and maintaining software products for MVS, providing application and programming language support as well as technical direction, and working with applications groups and other technical teams to develop solutions. Requires a BS and 7 years experience, including at least 3 years in the MVS environment and 3 years providing software support. Strong interpersonal and communication skills and ability to lead others will be highly beneficial. Experience supporting databases, knowledge of networking software, and experience with various operating environments are all preferred.

We offer a team-oriented environment and professional development opportunities, as well as competitive salaries and liberal benefits including an in house fitness center. Please send your resume, indicating current salary, **in confidence to: Champion International Corporation, Caryn Boland, Human Resources Specialist, 101 Knightsbridge Dr., Hamilton, OH 45020. Fax: (513) 868-4971.** Principals only, please. Visit our web site at **http://www.championinternational.com**



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# Auburn University

## *Chief Information Officer*

**DUTIES**
The Chief Information Officer (CIO) is a newly created position reporting to the Provost. The CIO is responsible for providing vision, leadership, strategic planning and coordination of information technology and telecommunications for the university. The CIO works closely with central and campus based information technology professionals to develop strategy and planning of information technology service and infrastructure throughout the university. The CIO directly manages central information technology staff who are responsible for university wide technology and telecommunications infrastructure and core business applications. The CIO also coordinates distributed computing within the university. This position's responsibilities span academic functions, administrative functions, and distance learning technologies.

**QUALIFICATIONS**
Candidates must have broad information technology knowledge and management skills with a minimum of eight years of increasing management responsibility that includes experience in a major information technology environment. Other qualifications include a masters degree, a proven ability to make technical issues understandable, and an ability to match technical opportunities to University missions. Proven skills in staff management, planning, diplomacy, and ability to build consensus are essential. Preferred skills include experience in information technology in higher education, experience in applying quality management, an advanced degree, and relevant experience beyond the eight year minimum.

**APPLICATION PROCESS**
Screening of candidates will begin February 15, 1997 and will continue until the position is filled. The University plans to fill the position as of October 1, 1997. For further information see www.panda.auburn.edu/cio/

Send vita, names and addresses of at least three references, and a letter of application which includes (a) candidate's vision of the role of information technology in higher education, and (b) perceived fit of candidate's background and experience with the position of Chief Information Officer to:

**C. Wayne Alderman**
**Chair, Search Committee, College of Business**
**516 Lowder Business Building**
**Auburn University, AL 36849-5240**

*Auburn University Is An Affirmative Action/Equal Opportunity Employer*
*Women And Minorities Are Encouraged To Apply*

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HIGHER COLLEGES OF TECHNOLOGY
UNITED ARAB EMIRATES

# Administrative Opportunities in Computing

The Higher Colleges of Technology is a system of eight government operated colleges providing post-secondary career/technical vocational programs in business, technology and health sciences to UAE Nationals. English is the language of the working environment.

Each of the colleges are generously equipped with Pentium computing labs for students using current application software. Staff and student workstations are networked using structured cabling design inclusive of ATM technologies for WAN connectivity. The Computer Center offers a SUN/Unix academic environment and a DEC Alpha VMS/ORACLE administrative environment including the applications of SCT's BANNER student records system, finance and a GUI-based, client/server human resource system.

Applications are invited from exceptional administrative personnel for central and college based positions in the following designations. All applicants should possess the capacity to work collaboratively in a dynamic multi-cultural environment. Further information is available on our Internet web site http://www.hct.ac.ae

**MANAGER of INFORMATION and TELECOMMUNICATION SERVICES** *REF HCWL*

**SUPERVISORS** *(REF SCWL)* **in the following functions:**
- **Systems Development**
- **Telecommunication Services**
- **Computer Operations**

**ADMINISTRATIVE SUPPORT STAFF** *(REF TCWL)* **in the following positions:**
- **Systems Analyst (Student Records, Finance or Human Resources)**
- **Wide Area Network Coordinator**
- **Internet Facilitator**
- **Internet Development Coordinator**

**and** *(REF TECWL)* **in the following areas:**
- **Data Base Administrator**
- **Programmer/Analyst**
- **Microcomputing Support Specialist**
- **Academic Computing Lab Technicians**

### Qualifications for Managers and Supervisors:
- Bachelor's Degree
- Minimum of ten years supervisory experience in a similar environment
- Excellent computing and communication skills

### General Qualifications for Administrative Support Staff:
- Bachelor's Degree
- Minimum five years experience in subject area
- Excellent communication skills

### Specific Experience for Systems Analyst/DBA/Programmer:
- Client-server environment essential
- SQL, ORACLE, and Open VMS
- GUI development including Visual Basic and C++

### Specific Experience for other Positions:
- Windows and Macintosh microcomputers
- Novell CNE for microcomputing and LAN/WAN protocols for networks essential
- WAN technologies including ATM
- Internet Web development

For application information and further details please contact our representative below or enquire direct on recruit@hct.ac.ae (quoting the relevant reference number in either case)

Public Relations Officer
Embassy of the United Arab Emirates
1010 Wisconsin Avenue N W (Suite 505)
Washington DC 20007. Fax 202 342 6458
http://www.hct.ac.ae

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**West Coast Openings**
- CICS Systems Programmer
- MVS Systems Programmer
- VTAM Systems Programmer
- ACF2 Data Security Analyst
- DB2 Database Administrator
- Capacity Planning Manager
- DB2 Systems Programmer
- MVS Developer 370 ALC
- MVS Technical Support
- Mainframe System Architect

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**DATA PROCESSING**
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- IDMS / Datacom
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# Career Survey: Artifical Intelligence Software

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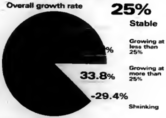

**Survey base:**
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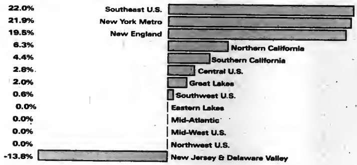
## Regional Growth Analysis



CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 35,000 technology manufacturers.
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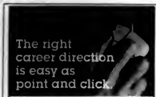

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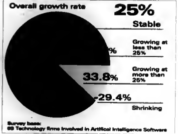

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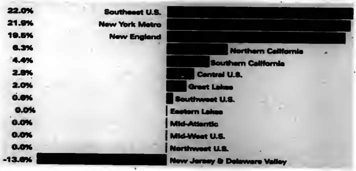

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## Marketplace

### TECHNOLOGY WATCH

# WEB MERCHANDISING TOOLS SPINNING OFF

*By Debra A. Velsmid*

MORE COMPANIES are selling products and services through World Wide Web sites now that major vendors have introduced software packages for Web merchandising. An industry protocol that provides tight encryption for online credit-card transactions, Secure Electronic Transaction (SET), has also been developed in response to security concerns.

The software packages, commonly called merchant servers, provide an interactive environment for merchandising and accepting orders online.

Vendors that offer these products include some well-known names. Microsoft Corp. has Merchant Server 1.0, IBM has Net.Commerce and Netscape Communications Corp. has an Electronic Commerce Platform and its SuiteSpot and Commerce Extensions products.

Other vendors to watch include Connect, Inc. with OneServer and OrderStream; Broadvision, Inc. with One-to-One WebApps; and ICat Corp. with its Electronic Commerce Suite, which consists of ICat Commerce Publisher and ICat Commerce Exchange. Meanwhile, Oracle Corp. has previewed its Project Apollo. A full release is planned for the first quarter of next year.

You could place bets on well-known vendors such as Microsoft or Netscape to gain the largest market share, but most analysts agree that it's too soon to tell who will come out on top.

**STEPS TO TAKE**

Analysts say an important first step for any company embarking on Web merchandising is to evaluate its goals — what it wants to accomplish from this form of merchandising.

"We recommend that people look carefully at their own strategy, how aggressive they want to be in their market, how aggressive they want to be on the Internet, in terms of defining the Internet channel for their business," says Stan Dolberg, director of the software strategy service at Forrester Research, Inc. in Cambridge, Mass.

Companies must also decide how much they want to invest in these packages. Prices for merchant server products vary. For example, ICat's package costs $1,495 per single-user version, Microsoft's product costs $18,490 for a server license, and administration license and Connect's OneServer costs $100,000 per server.

**BEFORE SELLING ON THE WEB**

- **Think strategy. How aggressive should you be on the Internet?**
- **Decide on the investment to make**
- **Identify your online customer base**
- **Plan the appearance of your Web site**
- **Find software that ties in to your back office**

A company must also look ahead to what kind of results it expects from Web merchandising. "You have to evaluate your budget and see what you really expect to happen," says Scott Smith, group director of the digital commerce group at Jupiter Communications in New York,

A merchant server package needs to tie in to the back office, the company's existing infrastructure for selling products or services, says David Weisman, director of money and technology strategies at Forrester. It should integrate and fully automate order entry, shipping, delivery and customer service. It should also eliminate the need to rekey information.

Victor Wheatman, vice president of electronic commerce strategies at Gartner Group, Inc. in San Jose, Calif., agrees. "Once companies set up a cyberstore or retail presence on the Web, are they going to be able to deal with the orders, or is each order going to be an exception?" he asks. "Are they going to be able to deal with customer service, or are there going to be problems?"

**FEELING SECURE**

Another issue is preventing credit-card numbers transmitted over the Internet from falling into the wrong hands. In response to security concerns and to provide one cohesive system for processing online credit-card payments, several industry players, including IBM, Microsoft and Netscape, worked with Visa International, Inc. and MasterCard International, Inc. to build SET. Its multitier security encrypts credit-card numbers so well that even merchants don't see them.

The groundwork has been laid for SET, but it hasn't been fully implemented. In the meantime, it's safe to say that no major software vendor is ignoring SET but rather incorporating SET compliancy into their merchant server packages.

"Everyone's pledged allegiance to SET," Dolberg says. The protocol is "probably six to nine months away from reality in the marketplace," he says.

*Velsmid is a freelance writer in Huntington, N.Y.*

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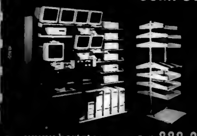

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| Epson America<br>http://www.epson.com | 78 |
| Executive Technolgy Summit '97 | 99 |
| FTP Software<br>http://www.ftp.com<br>(800) 282-4FTP | 74 |
| IBM<br>http://www.ibm.com | 70-71, C3 |
| IBM/Intersolve/Candle | 32/33 |
| Imation<br>http://www.imation.com | 42-43 |
| In Focus Systems<br>http://www.infocus.com | 10 |
| Informix Software<br>http://www.informix.com | 18-19, 29 |
| Intel<br>http://www.intel.com | 65 |
| Kingston Technolgy<br>http://www.kingston.com | C4 |
| Leadership Series | 40/41 |
| Lucent Technologies<br>http://www.lucent.com | 44 |
| McAfee<br>http://www.mcafee.com | 54 |
| Micro Focus<br>http://www.microfocus.com<br>(800) 872-6265 | 9 |
| Micron<br>http://www.micron.com | 136 |
| NEC Technologies<br>http://www.nec.com | 66-67 |
| NetManage<br>http://www.netmanage.com | 134 |
| Novell<br>http://www.novell.com | 38-39 |
| Open Text Inc<br>http://www.opentext.com | 22-23 |
| Oracle Corp.<br>http://www.oracle.com | 7, 11 |
| Peoplesoft<br>http://www.peoplesoft.com<br>(800)947-7753 | 21 |
| Progress Software<br>http://www.progress.com | 72 |
| SAS Institute<br>http://www.sas.com | 25, 80 |
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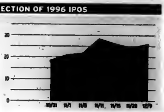
## A SELECTION OF 1996 IPOS

**Ingram Micro, Inc.**
**(Nasdaq: IM)**
**www.ingram.com**

**Wholesale distributor of microcomputer products**

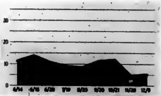
**Revenue Q3 1996: $2.93B**
**IPO Oct. 31: $18 per share**



**Unify Corp.**
**(Nasdaq: UNFY)**
**www.unify.com**

**Client/server application development tools**

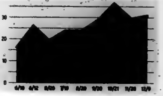
**Revenue Q3 1996: $73M**
**IPO June 14: $12 per share**



**Verilink Corp.**
**(Nasdaq: VRLK)**
**www.verilink.com**

**Wide-area network access products**

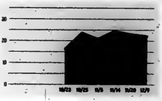
**Revenue Q3 1996: $14.6M**
**IPO June 10: $16 per share**



**CyberMedia, Inc.**
**(Nasdaq: CYBR)**
**www.cybermedia.com**

**PC utility software**

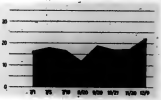
**Revenue Q3 1996: $8.7M**
**IPO Oct. 23: $16 per share**



**C/net, Inc.**
**(Nasdaq: CNWK)**
**www.cnet.com**

**World Wide Web online news service**

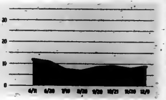
**Revenue Q3 1996: $4.5M**
**IPO July 1: $16 per share**



**InfoSeek Corp.**
**(Nasdaq: SEEK)**
**www.infoseek.com**

**World Wide Web search engine**

**Revenue Q3 1996: $4.5M**
**IPO June 11: $12 per share**



Note: All revenues are for calendar year

# PROCEED *with* CAUTION

More high-tech companies went public in 1996 than ever before. But these companies can still be risky investments.

By [illegible]

There was a bumper crop of high-tech initial public offerings (IPO) this year, but you should still tread carefully when it comes to investing in these companies.

Many of them — particularly those in the Internet segment — just don't have a long enough track record to be a sure bet.

But, boy, are there plenty of investment opportunities to at least consider. With just a few weeks remaining this year, 196 high-technology companies have gone public in 1996, each with capitalization of at least $50 million. This smashes last year's record of 164 high-tech IPOs.

Analysts say investors should be cautious when considering buying IPO shares. "Ideally, you want to look closely at financial statements for companies with a good product or good growth potential," says Ryan Jacob, director of research at IPO Value Monitor in New York.

### NEW WRINKLE

The Internet has made IPO investing trickier, agrees Mark Sherman, an analyst at Robertson, Stephens & Co. in San Francisco. "In the past, investors could get an accurate indication of how successful a software IPO would be based on how well the company met established criteria," he says.

With the Internet, investors have to carefully evaluate the soundness of companies' business plans and direction before plunging into an IPO investment, Sherman says.

So be careful in those choppy Internet start-up waters. Look for previous company success or innovative technology in a growing, but not overcrowded, Internet sector. Find companies with proven executives in leadership positions and a compelling product offering. It is wise, analysts say, to steer clear of unknown start-ups with amorphous "plans."

"You have to be crazy to go after anything that doesn't have an established track record," agrees Alan Newman, a market analyst at H. D. Brous & Co. in Great Neck, N.Y.

So why all the IPO activity this year? In part, it was due to it being a presidential election year. Election years typically see more IPOs, Newman says, because the first year of a new presidency is when economic belt-tightening takes place.

"Companies have been desperate to get into the IPO pipeline this year," he adds.

Plus, there was a more adventurous spirit among investors earlier in the year.

"What we saw in the spring was investors willing to buy into concept stocks," Jacob says, "Investors were willing to gamble a little bit on companies still in the development stage without an earnings track record."

Early this year, investors seemed especially hungry for anything Internet-related — quickly snapping up stock offerings from Internet search engine companies such as Excite, Inc. (Nasdaq: XCIT) and Yahoo, Inc. (Nasdaq: YHOO).

Now, however, the fever has cooled. Take a look at the Infoseek Corp. (Nasdaq: SEEK) chart at left. The company waited until June to issue its IPO, and investors' enthusiasm has been only lukewarm. That's because investors have become a bit more selective, Jacob says. "It has evidently become more important to investors for a company to have earnings or the potential for earnings in the near future."

Two areas where public offerings have carried over into strong stock performance have been software and networking consulting. In particular, the year 2000 problem has been a launching pad for a number of IPOs, such as Data Dimensions, Inc. (Nasdaq:DDIM) and Information Management Resources, Inc. (Nasdaq:IMRS).

# The Week in Stocks

## Gainers

## Losers

### PERCENT

| Gainers | | Losers | |
|---|---|---|---|
| Data Race Inc. | 25.6 | Komag Inc. | -28.8 |
| Creative Technology Ltd. | 18.6 | Cambex Corp. | -26.3 |
| Learning Co. (The) | 17.3 | Dataware Technologies Inc.(L) | -19.2 |
| Amdahl Corp. | 14.9 | Borland Int'l Inc. | -18.3 |
| Wall Data Inc. | 13.8 | NetManage Inc. | -18.0 |
| Comshare Inc. | 13.6 | Pinnacle Micro Inc.(L) | -17.9 |
| Network Computing Devices(H) | 12.2 | CompuServe Corp. | -16.8 |
| Cypress Semiconductor Corp.(H) | 12.0 | Edify Corp. | -16.0 |

### DOLLAR

| Gainers | | Losers | |
|---|---|---|---|
| Intel Corp.(H) | 8.50 | Komag Inc. | -9.88 |
| Netscape Comm. Corp. | 4.06 | 3 COM Corp.(H) | -5.88 |
| Data Race Inc. | 4.00 | FORE Systems Inc. | -5.38 |
| Microsoft Corp.(H) | 3.88 | America On-Line | -5.00 |
| Cambridge Tech. Partners | 3.50 | Ceridian Corp. | -4.63 |
| Computer Sciences(H) | 3.13 | PictureTel Corp. | -4.50 |
| Micrel Semiconductor Inc.(H) | 3.00 | McAfee Associates | -4.50 |
| Zilog Inc. | 2.88 | Paychex | -3.88 |

## INDUSTRY ALMANAC

# One year later

A year ago, *Computerworld* asked several Wall Street analysts to look ahead into 1996 and pontificate about which technology stocks they thought would have an "interesting" year. We didn't ask for their hot picks or their favorites for '96. We just wanted to hear what high-tech stocks the analysts' thought would be interesting to follow.

Jim Wade, an analyst at Alex. Brown & Sons, Inc. in Baltimore, last year said internetworking companies Cisco Systems, Inc. (Nasdaq: CSCO) and Bay Networks, Inc. (Nasdaq: BAY) were poised to benefit from the Internet's need for increased capacity. Both companies had an interesting year, but in different directions (see chart).

Nate Zelnick, most recently an analyst at Mecklermedia Corp., picked two big winners with Intel Corp. (Nasdaq: INTC) and Cascade Communications Corp. (Nasdaq: CSCC). Adam Schoenfeld at Jupiter Communications, Inc. in New York foresaw an interesting year for PSINet, Inc. (Nasdaq: PSIX) and Checkfree Corp. (Nasdaq: CKFR).

Al Goldman, an analyst at A. G. Edwards in St. Louis, stepped outside the Internet and offered up Sybase, Inc. (Nasdaq: SYBS), Applied Materials, Inc. (Nasdaq: AMAT) and Compaq Computer Corp. (Nasdaq: CPQ).

Some companies were mentioned by several analysts. Apple Computer, Inc. (Nasdaq: AAPL), Digital Equipment Corp. (NYSE: DEC) and Microsoft Corp. (Nasdaq: MSFT) all bore watching, according to our panel. — *Stewart Deck*

### AND WHAT A YEAR IT WAS!

**Our panel of analysts predicted the following technology stocks would have an interesting 1996:**

| | 1/2/96 | 4/1/96 | 8/1/96 | 12/2/96 |
|---|---|---|---|---|
| Apple | [illegible] | 25½ | [illegible] | 25⅛ |
| Bay Networks | [illegible] | 29⅛ | [illegible] | 27⅜ |
| Cascade | [illegible] | 43⅜ | [illegible] | 74 9/16 |
| Checkfree | [illegible] | 17¾ | [illegible] | 16½ |
| Cisco | [illegible] | 47¼ | [illegible] | 68⅝ |
| Digital | [illegible] | 54¼ | [illegible] | 40½ |
| Intel | [illegible] | 57½ | [illegible] | 127⅛ |
| PSInet | [illegible] | 9⅞ | [illegible] | 13½ |
| Microsoft | [illegible] | 51¾ | [illegible] | 78⅞ |
| Security Dynamics | [illegible] | 25½ | [illegible] | 42 11/16 |

**[illegible]**

| Exch | 52 Week | Range | | Dec. 13 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| COMS | 81.36 | 33.30 | 3COM Corp (H) | 71.94 | 1.69 | 7.1 |
| AIT | 50.00 | 49.63 | Ameritech Corp | 55.50 | 3.38 | 6.1 |
| T | 68.00 | 46.25 | AT&T | 38.75 | 0.13 | 0.0 |
| ASND | 76.38 | 28.75 | Ascend Communications | 67.63 | 1.88 | 2.7 |
| BNYN | 12.00 | 1.25 | Banyan Systems Inc | 5.00 | 0.13 | 0.1 |
| BAY | 49.00 | 18.12 | Bay Networks Inc | 22.88 | -1.75 | 7.2 |
| BEL | 60.13 | 61.50 | Bell Atlantic Corp | 60.75 | -0.10 | -0.0 |
| BLS | 45.68 | 35.28 | BellSouth Corp | 40.13 | 1.00 | 2.9 |
| BRKT | 42.25 | 30.11 | Brooktrout Technology | 50.75 | 6.50 | 3.0 |
| CS | 42.83 | 26.50 | Cabletron Systems | 17.88 | 3.38 | 0.5 |
| CSCC | 81.25 | 50.01 | Cascade Communications | 64.00 | 5.63 | 5.4 |
| CGRM | 20.13 | 11.75 | Centigram Communications | 12.75 | -0.88 | -6.4 |
| CSCO | 68.63 | 32.00 | Cisco Systems Inc | 64.50 | 0.18 | 0.0 |
| CLIX | 8.25 | 4.50 | Compression Labs Inc | 6.00 | 0.00 | 0.0 |
| CMNT | 10.50 | 4.00 | Computer Network Tech | 6.50 | 0.00 | 1.0 |
| XCOM | 11.25 | 4.25 | CrossComm | 5.63 | -0.13 | -2.2 |
| DIGI | 38.75 | 12.63 | DSC Communications | 17.50 | 0.13 | 0.5 |
| FORE | 64.75 | 23.38 | FORE Systems Inc | 37.25 | -5.38 | -11.0 |
| GDC | 20.00 | 8.13 | General DataComm Indus | 12.00 | -1.00 | -8.1 |
| GSX | 40.50 | 31.00 | General Signal Networks | 41.88 | 0.13 | 0.3 |
| GTE | 48.25 | 31.75 | GTE Corp | 42.10 | 3.15 | 4.6 |
| LU | 57.10 | 20.75 | Lucent Tech | 47.38 | 1.38 | 3.8 |
| MADGF | 48.63 | 8.13 | Madge Networks NV | 10.75 | 0.13 | 1.1 |
| MCIC | 32.13 | 22.13 | MCI Communications Corp (H) | 31.50 | 0.25 | 0.8 |
| MNPI | 24.50 | 3.50 | Microcom Inc | 14.50 | 0.00 | 0.0 |
| NETM | 28.50 | 5.38 | NetManage Inc | 6.25 | -1.38 | -18.0 |
| NTRX | 10.88 | 2.75 | Netrix Corp | 5.50 | 0.25 | 4.8 |
| NCDI | 10.75 | 2.50 | Network Computing Devices (H) | 10.75 | 1.25 | 12.2 |
| NWK | 16.00 | 11.13 | Network Equipment Tech | 15.50 | 1.38 | 9.7 |
| NETG | 29.63 | 12.00 | Network General | 24.38 | 0.13 | 0.3 |
| NN | 31.25 | 18.25 | Newbridge Networks Corp | 30.38 | 0.88 | 3.0 |
| NT | 37.63 | 40.75 | Northern Telecom Ltd | 50.75 | 1.00 | 3.1 |
| NOVL | 16.00 | 8.75 | Novell Inc | 10.13 | 0.50 | 4.7 |
| NYN | 58.25 | 42.00 | Nynex Corp | 45.38 | 0.00 | 0.0 |
| OCTL | 11.75 | 11.03 | Octel Communications Corp | 18.00 | 0.25 | 2.6 |
| ODSI | 28.00 | 11.00 | Optical Data Systems Inc | 13.63 | 0.50 | 3.8 |
| PAC | 37.81 | 23.00 | Pacific Telesis | 34.00 | 1.00 | 3.0 |
| PCTL | 46.75 | 20.50 | PictureTel Corp | 26.75 | -4.50 | -14.0 |
| PTON | 7.50 | 2.00 | Proxim Inc | 2.10 | 0.60 | 10.5 |
| RACO | 7.00 | 3.00 | Racotek Inc | 4.38 | -0.38 | 7.0 |
| RETX | 10.88 | 1.88 | Retix | 7.88 | -0.25 | 0.3 |
| SBC | 60.75 | 46.00 | SBC Communications | 49.25 | 1.75 | 3.4 |
| SFA | 20.38 | 12.00 | Scientific Atlanta Inc | 18.50 | 0.00 | 0.3 |
| SHVA | 81.25 | 25.13 | Shiva Corp | 39.00 | 3.00 | -4.0 |
| ZON | 45.50 | 14.50 | Sprint Corp | 38.00 | 1.25 | 3.2 |
| SMSC | 10.03 | 8.38 | Standard Microsystems Corp | 10.75 | 0.00 | 4.4 |
| USRX | 105.50 | 12.75 | US Robotics | 75.88 | 0.75 | 1.0 |
| USW | 35.00 | 37.05 | U S West Inc | 31.13 | 0.25 | 0.8 |
| XIRC | 21.75 | 8.50 | Xircom | 40.60 | 0.00 | 2.5 |
| XYLN | 76.00 | 20.75 | Xylan Corp (L) | 50.60 | 1.75 | 3.4 |

**[illegible]**

| Exch | 52 Week | Range | | Dec. 13 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| AALR | 15.25 | 5.83 | Advanced Logic Research (H) | 11.25 | 0.88 | 9.2 |
| AAPL | 38.63 | 16.00 | Apple Computer Inc | 23.60 | 1.00 | 4.0 |
| ASTA | 8.25 | 3.94 | AST Research Inc | 3.38 | 0.13 | 2.4 |
| CPQ | 81.13 | 35.00 | Compaq Computer Corp (H) | 81.13 | 1.50 | 1.8 |
| DELL | 94.88 | 11.50 | Dell Computer Corp (H) | 57.60 | 1.25 | 2.2 |
| GATE | 60.25 | 18.00 | Gateway 2000 Inc (H) | 60.75 | 1.13 | 1.9 |
| HWP | 57.75 | 20.88 | Hewlett Packard Co | 51.00 | 1.00 | 5.0 |
| MUEI | 23.50 | 8.75 | Micron Electronics Inc | 00.00 | 1.13 | 0.0 |
| NIPNY | 85.83 | 82.50 | NEC America | 61.25 | 1.00 | 6.5 |
| SGI | 17.00 | 17.88 | Silicon Graphics | 26.00 | 2.00 | 8.1 |
| SUNW | 35.13 | 18.00 | Sun Microsystems Inc | 50.12 | 1.13 | 0.0 |

**[illegible]**

| Exch | 52 Week | Range | | Dec. 13 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| AMH | 13.50 | 6.75 | Amdahl Corp | 13.50 | 1.75 | 14.9 |
| DGN | 18.13 | 9.00 | Data General Corp | 14.50 | -0.88 | 2.8 |
| DEC | 16.50 | 28.20 | Digital Equipment Corp | 39.00 | 0.00 | 1.5 |
| IBM | 150.00 | 83.13 | IBM | 158.00 | 2.25 | 1.8 |
| MDCD | 50.25 | 6.25 | Meridian Data Inc (L) | 9.88 | -0.13 | 1.0 |
| NETF | 8.38 | 2.20 | NetFrame | 2.81 | 0.00 | 2.3 |
| SQNT | 18.38 | 10.13 | Sequent Computer Sys (H) | 19.81 | -0.38 | 2.2 |
| SEQS | 5.00 | 1.00 | Sequoia Systems Inc | 2.38 | -0.13 | 5.0 |
| SRA | 24.88 | 10.07 | Stratus Computer Inc | 00.00 | 0.88 | 1.4 |
| TDM | 13.25 | 8.38 | Tandem Computers Inc | 11.75 | 0.25 | 1.8 |
| UIS | 8.13 | 5.38 | Unisys Corp | 6.88 | -0.00 | 0.0 |

**[illegible]**

| Exch | 52 Week | Range | | Dec. 13 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| ADBE | 70.00 | 28.50 | Adobe Systems Inc | 38.25 | 3.60 | 1.5 |
| AMSWA | 7.13 | 3.06 | American Software Inc | 8.00 | 0.50 | 9.1 |
| APLX | 42.50 | 18.11 | Applix Inc | 22.25 | 1.75 | 8.5 |
| ARSW | 82.75 | 21.00 | Arbor Software | 22.25 | 0.75 | 3.0 |
| ADSK | 44.25 | 18.50 | Autodesk Inc | 26.50 | 1.25 | 4.5 |
| BGSS | 20.25 | 14.00 | BGS Systems Inc | 22.00 | 0.00 | 0.0 |
| BMCS | 60.75 | 18.61 | BMC Software Inc | 45.63 | 0.75 | 1.1 |
| BOOL | 21.75 | 15.10 | Boole and Babbage | 30.80 | 1.17 | 0.0 |
| BORL | 21.25 | 4.75 | Borland Int'l Inc | 6.11 | 1.38 | 18.3 |
| BOBJY | 55.50 | 8.61 | Business Objects | 13.38 | 1.38 | 11.9 |
| CAYN | 11.88 | 4.00 | Cayenne Software Inc | 4.00 | 0.25 | 5.0 |
| CNTO | 7.13 | 3.50 | Centura Software | 2.25 | 0.00 | 0.0 |
| CYE | 10.63 | 10.13 | Cheyenne Software Inc | 00.38 | 0.00 | 0.0 |
| COGNF | 26.50 | 11.75 | Cognos Inc | 31.88 | 0.00 | 0.0 |
| CA | 57.83 | 11.88 | Computer Associates | 60.60 | 1.25 | 2.0 |
| CVN | 15.50 | 5.75 | Computervision Corp | 8.75 | 0.50 | 6.0 |
| CPWR | 63.25 | 15.88 | Compuware Corp (H) | 57.00 | 3.50 | 4.0 |
| CSRE | 62.00 | 10.75 | Comshare Inc | 18.75 | 1.00 | 13.6 |
| COSFZ | 17.00 | 8.50 | Cooper Corp | 2.75 | 0.00 | 3.8 |
| DWTI | 10.75 | 5.01 | Dataware Technologies Inc (L) | 3.63 | -0.81 | 19.2 |
| FILE | 67.00 | 50.00 | FileNet Corp | 34.60 | 0.75 | 4.3 |
| FRTE | 81.13 | 24.75 | Forte Software | 15.88 | -0.80 | 5.4 |
| FTPS | 38.75 | 6.88 | FTP Software Inc | 7.63 | -0.08 | -4.3 |
| HUMCF | 49.00 | 25.00 | Hummingbird Comm Ltd | 50.00 | 0.25 | 0.8 |
| HYSW | 25.00 | 9.15 | Hyperion Software Corp | 21.25 | 1.00 | 5.6 |
| IBIC | 10.25 | 11.00 | Information Builders | 13.63 | 0.13 | 0.9 |
| IFMX | 36.75 | 16.00 | Informix Corp | 21.38 | 1.00 | 2.0 |
| INGR | 20.13 | 8.63 | Intergraph Corp | 10.50 | 0.50 | 0.3 |
| LEAF | 11.38 | 2.00 | Interleaf Inc | 2.75 | 0.00 | 0.0 |
| ISLI | 16.38 | 7.50 | Intersolv Inc | 9.75 | 0.00 | 0.8 |
| INTU | 60.50 | 25.00 | Intuit Inc | 30.25 | -0.80 | 1.4 |
| TLC | 12.50 | 11.58 | Learning Co (The) | 19.25 | 2.88 | 17.3 |
| LGWX | 22.25 | 5.38 | Logic Works | 8.50 | -0.50 | 7.8 |
| MAPS | 32.25 | 2.80 | MapInfo Corp | 10.50 | 0.25 | 2.3 |
| MATH | 8.25 | 3.25 | MathSoft | 4.63 | 0.25 | 5.7 |
| MCAF | 52.88 | 16.00 | McAfee Associates | 46.75 | -4.50 | 8.8 |
| MENT | 18.25 | 7.38 | Mentor Graphics | 10.60 | 0.88 | 3.7 |
| MIFGY | 21.25 | 8.25 | Micro Focus | 10.13 | 0.25 | 0.9 |
| MGXI | 10.88 | 5.00 | Micrografx Inc | 8.13 | -0.08 | 5.0 |
| MSFT | 84.50 | 80.00 | Microsoft Corp (H) | 80.13 | 3.88 | 5.1 |
| ORCL | 51.00 | 20.50 | Oracle Corp | 44.00 | 0.00 | 4.5 |
| PMTC | 56.75 | 25.88 | Parametric Technology (H) | 63.13 | -0.80 | -0.7 |
| PARQ | 14.05 | 2.25 | ParcPlace Systems Inc | 3.75 | -0.25 | 8.3 |
| PSFT | 50.25 | 31.15 | PeopleSoft (H) | 47.75 | 1.00 | 0.1 |
| PTEC | 20.38 | 11.00 | Phoenix Technologies | 15.75 | 0.10 | 5.2 |
| PSQL | 13.50 | 5.15 | Platinum Software | 12.13 | 0.13 | 1.0 |
| PLAT | 18.75 | 8.20 | Platinum Technology | 10.75 | 1.38 | 10.7 |
| PRGS | 38.00 | 12.13 | Progress Software Corp | 19.00 | 0.00 | 0.0 |
| RNBO | 25.50 | 14.63 | Rainbow Technologies Inc | 30.50 | 0.13 | 0.8 |
| REDB | 41.00 | 18.25 | Red Brick Systems Inc | 32.00 | -0.88 | -2.2 |
| SAPE | 48.25 | 29.25 | Sapient Corp | 43.00 | 0.00 | 0.0 |
| SCOC | 9.75 | 5.00 | SCO Inc | 7.00 | 0.00 | 0.0 |
| SDTI | 58.50 | 21.25 | Security Dynamics Tech | 37.25 | 0.88 | 2.6 |
| SPCO | 3.50 | 1.00 | Software Publishing Corp | 1.13 | 0.00 | 0.0 |
| SQAI | 39.75 | 10.00 | SQA Inc | 30.00 | -0.88 | -2.8 |
| SOTA | 10.75 | 9.75 | State of the Art | 11.00 | 0.63 | 1.2 |
| SSW | 61.88 | 40.25 | Sterling Software Inc | 33.88 | -0.75 | -2.2 |
| SDRC | 17.88 | 15.00 | Structural Dynamics Research | 18.13 | 1.13 | 5.6 |
| SYBS | 18.88 | 11.50 | Sybase Inc | 18.13 | 1.00 | 5.7 |
| SYMC | 37.38 | 8.75 | Symantec Corp | 16.13 | 1.25 | 8.4 |
| SNPS | 50.00 | 37.00 | Synopsys | 44.50 | -0.50 | 1.6 |
| SSAX | 26.75 | 8.25 | System Software Assoc | 11.88 | 1.25 | 0.1 |
| SYSF | 00.00 | 3.38 | Systemsoft Corp | 12.13 | 0.00 | 0.0 |
| TRUV | 8.81 | 2.00 | Truevision Corp | 3.31 | 0.06 | 1.0 |
| VIEW | 17.00 | 8.38 | ViewLogic Systems | 10.38 | 0.13 | 1.3 |
| VMRK | 18.63 | 5.00 | VMark Software Inc | 7.94 | 0.88 | 9.5 |
| WALK | 15.63 | 8.25 | Walker Interactive Systems | 10.75 | -0.00 | -4.0 |
| WALL | 27.00 | 12.25 | Wall Data Inc | 10.50 | 1.00 | 13.8 |
| WANG | 26.38 | 15.38 | Wang Laboratories Inc | 20.50 | -0.13 | -0.6 |

**[illegible]**

| Exch | 52 Week | Range | | Dec. 13 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| AOL | 71.00 | 22.38 | America On-Line | 24.38 | -5.00 | -17.2 |
| BBN | 45.75 | 15.83 | BBN Corp | 21.00 | 1.00 | 0.7 |
| CSRV | 35.00 | 8.50 | CompuServe Corp | 10.00 | -2.00 | -16.8 |
| EDFY | 35.75 | 13.00 | Edify Corp | 19.25 | -2.63 | -13.0 |
| LCOS | 40.25 | 5.75 | Lycos Inc | 19.25 | -0.13 | -0.9 |
| NETC | 59.25 | 17.50 | Netcom On-Line | 16.00 | -1.00 | -5.8 |
| NSCP | [illegible] | [illegible] | Netscape Comm Corp | 47.75 | 4.06 | 10.0 |
| OMKT | 42.38 | 16.00 | Open Market Inc | 15.25 | 2.38 | 18.3 |
| PSIX | 09.00 | 6.75 | PSINet | 10.75 | 6.25 | 14.0 |
| QDEK | 63.75 | 8.00 | Quarterdeck Corp | 5.00 | -0.31 | -5.8 |
| RAPT | 39.38 | 12.75 | Raptor Systems | 26.50 | 1.75 | 8.0 |
| SCUR | 60.00 | 7.75 | Secure Computing Corp | 8.53 | 1.00 | 11.0 |
| SPYG | 91.00 | 00.00 | Spyglass Inc | 15.38 | 1.13 | -6.9 |
| YHOO | 41.00 | 15.00 | Yahoo! Inc | [illegible] | 1.00 | -4.0 |

**[illegible]**

| Exch | 52 Week | Range | | Dec. 13 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| AMD | 37.75 | 10.25 | Advanced Micro Devices (H) | 37.25 | 3.25 | 8.8 |
| ADI | 31.50 | 17.00 | Analog Devices Inc (H) | 34.13 | 1.88 | 5.7 |
| CHPS | [illegible] | 6.00 | Chips and Technologies | [illegible] | 1.00 | 4.0 |
| CRUS | 00.63 | 12.63 | Cirrus Logic | 18.50 | 0.88 | 4.8 |
| CY | 19.63 | 8.13 | Cypress Semiconductor Corp (H) | 15.25 | 1.75 | 13.0 |
| CYRX | 36.50 | 11.00 | Cyrix | 21.13 | 1.63 | 8.3 |
| INTC | 134.00 | 50.81 | Intel Corp (H) | 136.38 | 8.50 | 6.6 |
| LSI | 39.63 | 17.00 | LSI Logic Corp | 31.13 | 0.75 | 2.0 |
| LSCC | 35.00 | 18.75 | Lattice Semiconductor | 41.00 | 1.88 | 4.5 |
| MCRL | 35.00 | 10.00 | Micrel Semiconductor Inc (H) | 31.75 | 3.00 | 10.4 |
| MU | 60.63 | 60.63 | Micron Technology | 35.00 | 2.13 | 6.4 |
| MOT | 68.50 | 68.75 | Motorola Inc | 60.00 | -0.50 | -0.8 |
| NSM | 33.63 | 15.00 | National Semiconductor (H) | 26.63 | 0.38 | 1.0 |
| TXN | 68.88 | 40.00 | Texas Instruments (H) | 68.88 | 0.88 | 1.4 |
| VLSI | 29.25 | 10.00 | VLSI Technology (H) | 25.75 | -0.75 | -2.8 |
| XLNX | 46.50 | 25.38 | Xilinx | 39.00 | -2.63 | -6.1 |
| ZLG | 00.38 | 11.88 | Zilog Inc | 28.88 | 2.88 | 11.1 |

**[illegible]**

| Exch | 52 Week | Range | | Dec. 13 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| APCC | 21.50 | 7.88 | American Power Conversion (H) | 25.13 | 0.63 | 2.6 |
| ADPT | 41.13 | 37.00 | Adaptec Inc | 40.13 | 1.25 | 3.3 |
| CBEX | 6.88 | 2.75 | Cambex Corp | 1.75 | -0.63 | -26.3 |
| CREAF | 11.13 | 3.50 | Creative Technology Ltd | 10.38 | 1.63 | 18.6 |
| RACE | 19.88 | 3.75 | Data Race Inc | 19.63 | 4.00 | 25.6 |
| DTML | 8.82 | 4.13 | [illegible] Corp | 8.13 | 0.63 | 0.3 |
| EMC | 33.13 | 20.13 | EMC Corp | 29.75 | -0.75 | -2.5 |
| EMLX | 21.88 | 8.88 | Emulex Corp | 15.75 | 2.25 | 17.4 |
| ESCC | 29.00 | 10.00 | Evans and Sutherland | 22.88 | 1.88 | 9.7 |
| EXBT | 23.75 | 11.63 | Exabyte | 10.25 | -0.88 | 0.3 |
| IISLF | 6.13 | 1.38 | Intelligent Info Systems | 1.88 | 0.00 | 0.0 |
| IOM | 35.13 | 5.75 | Iomega Corp | [illegible] | 3.00 | -14.0 |
| IPLS | 8.25 | 3.63 | IPL Systems Inc | 1.00 | -0.13 | 0.3 |
| KMAG | 37.00 | 17.63 | Komag Inc | 24.13 | -9.88 | -28.5 |
| MTSI | 27.38 | 19.25 | MicroTouch Systems Inc (H) | 27.00 | 2.38 | 9.0 |
| PEAK | 34.75 | 50.13 | Peak Technologies Group | 12.88 | 0.75 | 0.4 |
| PNCL | 19.38 | 6.00 | Pinnacle Micro Inc (L) | 4.00 | -0.88 | -17.9 |
| AQM | 8.75 | 3.75 | QMS Inc | 5.25 | 0.13 | 2.5 |
| QNTM | 30.88 | 10.88 | Quantum Corp (H) | 31.75 | 1.25 | 4.3 |
| RDUS | 4.00 | 0.44 | Radius Inc | 0.50 | 0.00 | 0.0 |
| SEG | 42.75 | 40.13 | Seagate Technology | 39.75 | 0.00 | 1.2 |
| STK | 52.00 | 22.00 | Storage Technology | 38.38 | 1.88 | 5.0 |
| STLC | 8.75 | 0.75 | StreamLogic Corp | 0.50 | 0.00 | -0.3 |
| TEK | 52.88 | 29.75 | Tektronix Inc | 49.38 | -0.88 | -1.7 |
| WDC | 60.88 | 15.75 | Western Digital Corp (H) | 57.63 | -0.75 | -1.3 |
| XRX | 58.25 | 40.88 | Xerox Corp | 52.00 | 0.13 | 0.2 |

**[illegible]**

| Exch | 52 Week | Range | | Dec. 13 3 pm | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| AMSY | 22.13 | 12.50 | American Mgmt Systems | 17.25 | 1.63 | 4.0 |
| ANLY | 29.38 | 13.38 | Analysts Int'l (H) | 30.13 | 0.25 | 0.8 |
| AUD | 49.75 | 53.00 | Auto Data Processing | 41.13 | 0.00 | 0.0 |
| BDMF | 35.38 | 21.44 | BDM International Inc | [illegible] | 0.63 | 1.4 |
| CATP | 37.25 | 15.00 | Cambridge Tech Partners | 30.63 | 3.50 | 12.0 |
| CEN | 63.00 | 38.83 | Ceridian Corp | 41.00 | -4.63 | -10.1 |
| CDO | 39.00 | 18.88 | Comdisco Inc | 31.55 | 0.53 | 0.4 |
| CHRZ | 34.00 | 15.00 | Computer Horizons | 34.75 | 0.00 | 1.0 |
| CSC | 89.38 | 64.75 | Computer Sciences (H) | 82.25 | 3.13 | 4.0 |
| TSA | 45.50 | 16.75 | Computer Task Group | 42.13 | 1.00 | 2.4 |
| CPU | 40.00 | 9.00 | CompUSA Inc | 19.88 | 1.25 | 6.3 |
| CDAT | 60.63 | 32.75 | Control Data Systems Inc | 20.50 | 1.00 | 5.2 |
| EGGS | 13.88 | 4.25 | Egghead Discount Software | 5.38 | 0.13 | 2.0 |
| EDS | 60.88 | 42.75 | Electronic Data Systems Corp | 45.25 | 1.63 | 3.3 |
| INAC | 38.50 | 12.38 | Inacom Corp | 33.25 | -2.75 | 3.0 |
| INEL | 11.88 | 3.00 | Intelligent Electronics | 2.88 | -0.00 | -4.0 |
| KEA | 39.50 | 8.13 | Keane Inc (H) | 28.88 | 1.00 | 3.9 |
| MICA | 21.88 | 3.13 | MicroAge Inc (H) | 22.13 | -0.88 | 3.0 |
| PAYX | 67.00 | 60.63 | Paychex | 49.38 | -3.88 | 3.3 |
| PMS | 55.38 | 33.63 | Policy Management Sys | 40.50 | 0.13 | 0.0 |
| REY | 48.25 | 13.75 | Reynolds and Reynolds | 25.88 | -0.38 | 1.5 |
| SCBI | 40.63 | 14.00 | SCB Computer Tech Inc | 17.00 | [illegible] | [illegible] |
| SEIC | 26.38 | 15.25 | SEI Corp | 21.63 | 0.17 | 0.8 |
| SMTD | 73.13 | 43.25 | Shared Medical Systems | 58.75 | 1.38 | -2.4 |
| SSPE | 32.25 | 17.00 | Software Spectrum Inc (H) | 31.00 | 1.25 | 4.2 |
| VST | 49.25 | 8.00 | VanStar Corp | 24.75 | -0.88 | 3.0 |
| SNDT | 47.00 | 27.00 | SunGard Data Systems | 40.75 | 0.00 | 1.2 |

KEY (H) = New annual high reached in period (L) = New annual low reached in period

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# Users hold off on 200-MHz Pentiums

CONTINUED FROM PAGE 1

"We'll all move to 200-MHz machines eventually," said Wayne Stein, a project manager at Electronic Data Systems Corp.'s General Motors Access Program in Warren, Mich.

Most desktops aren't equipped to handle a 200-MHz Intel Corp. Pentium or Pentium Pro, he said. "It's like giving someone a car that can do 220 [miles per hour] when they're living on a one-lane dirt road;" Stein said.

PCs with 133- and 166-MHz chips are the top sellers at CompUSA

Stein and other users said until important components, such as the bus structure and more mainstream 32-bit applications that take advantage of 200-MHz chips, hit the streets, there is no compelling need to rush out and pay the premium for them. "Especially when you know the price will drop 20% to 30% by summer," Stein said.

Gary Wilkerson, program and external services administrator at Kaiser Permanente Health Plan, Inc. in Atlanta, agreed. Kaiser has 90,000 users worldwide. The health care company mainly has a mix of 133- and 166-MHz systems.

Kaiser's new installations all are 166-MHz machines, Wilkerson said. "There's no noticeable boost in throughput and no real benefits to 200-MHz Pentiums over the 133- or 166-MHz systems unless you're running Windows NT," he said.

Even organizations that classify themselves as leading-edge Windows NT Workstation users, such as Multicare Companies, Inc. in Hackensack, N.J., are deferring wholesale upgrades to 200-MHz Pentiums for at least six months.

Tony Macaluso, director of information technology at Multicare, said the health care firm's standard configuration for its Windows NT Workstation desktops is a 166-MHz machine equipped with a 1.2G-byte hard drive and 32M bytes of RAM to support leading-edge 32-bit client/server applications.

"We're probably not *too* far away from getting 200-MHz systems," Macaluso said.

Multicare is in the minority, though. Many users, such as Phillips Petroleum Co. in Bartlesville, Okla., have just started to roll out Windows 95, and their PC upgrades are likewise lagging.

"We haven't had adequate hardware for Windows 95 across the board. There are still even some [286-based machines] out there," said Johnny Olivas, network administrator at Phillips' information technology center in Houston.

Users who want to run Windows 95 must have at least a 60-MHz Pentium PC, Olivas said, and Phillips' IT center currently answers requests with 133-MHz models.

"Next year, we'll probably ship 200-MHz and even faster machines, but I don't think we're gaining much by faster processors," Olivas said. He said he expects that clerical users will run Windows 95, while "the engineering/geophysical types" move to Windows NT for the best performance.

**NOT IN THE CARDS**

But at least two users said their next purchases would be 133-MHz Pentium machines.

Mark Factor, vice president of information systems at Au Bon Pain, Inc. in Boston, said his company will buy Gateway 2000, Inc. 133-MHz machines. Factor said Au Bon Pain is implementing Notes while it continues to run Windows 3.11 and Lotus Development Corp.'s SmartSuite.

"We're going to skip Windows 95 because there's nothing we're doing [in terms of applications] to get value out of it," Factor said. He said the company's move to Windows NT Workstation will likely be sometime in the next year.

John Williams, manager of IS at Priority Pharmacy, Inc. in San Diego, said his company formulated new and higher desktop hardware standards just a few weeks ago. The users will go from 66-MHz 486-based machines to 133-MHz Pentium Pro machines.

**Wyse Technology plans LCD monitors with touch screens. Page 45.**

## Keeping up with shrinking life cycles

**Although organizations' desktop preferences may vary, there is one thing on which all users agree: Leading-edge desktop hardware remains the industry standard for months, not years.**

**This rapid technology advance is fostering a disquieting trend. It is wreaking havoc on users' attempts to standardize, and it is adding more work to the already onerous network management burdens.**

**"It seems we're upgrading our hardware almost every three to six months. The hardware market is so volatile that it's worrisome," said Tony Macaluso, IT director at Multicare.**

**Without a breather between next-generation processors, the health care firm finds itself hard-pressed to standardize. To help keep maintenance costs down, Multicare buys its own memory and other PC components and assembles the machines itself.**

**"We've gone from life cycles of three years to six months, which means we're always challenged to stay current. Who knows where it will end," Macaluso said. — Laura DiDio**

## Sizzling hot software

**Not to be outdone by the seasonal glitz surrounding computer hardware, software sales also are sizzling.**

**A quick check of computer retailers revealed checkout lines of shoppers laden with loads of software that would barely fit in Santa's sleigh. The hottest items, not surprisingly, are computer games.**

**Barry O'Neil, general manager at CompUSA, said the Barbie doll software games are the hottest packages in his store. "The Barbie software is flying out the door; it is 'The Big Thing' of this Christmas season. Barbie software is the equivalent of the Tickle-Me Elmo dolls," he said.**

**As for the boys, Tony Macaluso, IT director at Multicare, said his two sons, ages 15 and 13, are big on video games — especially Command and Conquer. "They're even burning up the phone lines, playing interactively with their friends," he said.**

**Wayne Stein, a project manager at EDS, said his 6-year-old son and 5-year-old daughter are asking Santa to bring them video games that involve the latest children's movies — in this case, 101 *Dalmatians*. As for his 18-month-old daughter, "She seems to prefer the Microsoft ActiveX applications. She bangs on the keyboard and loves to watch things spin around on the monitor," Stein said.**

**For the adults, Microsoft's Office sales continue brisk this holiday season. And one-time Microsoft acquisition target Intuit, Inc. is scoring big with its Quicken and Turbo Tax accounting software packages, O'Neil said. — Laura DiDio**

# 3Com links Token Ring, Fast Ethernet

*By Bob Wallace*

TOKEN RING switches are hot. Fast Ethernet networks are white hot. But until now, it has been hard to link the two islands of switching.

3Com Corp. last week announced a hardware module that, when used with proprietary adapter cards, will give users of 3Com Token Ring switches low-cost and high-speed access to local servers.

But users must decide between 3Com's proprietary spin on Fast Ethernet and products based on Fast Ethernet standards.

"If you've standardized on 3Com equipment, this approach offers performance benefits," said Skip MacAskill, a senior research analyst at Gartner Group, Inc. in Stamford, Conn. "But 3Com users that want standard Fast Ethernet and users that want multivendor networks will shy away."

One 3Com user — presented as a reference account briefed on the announcement — was dismayed to hear about the vendor's proprietary spin. "This raises some big flags with us," said James Karn, information systems consultant at Provident Companies, Inc., an insurance company in Chattanooga, Tenn.

3Com created a scheme for mapping Token Ring frames into Fast Ethernet frames without the time- and compute-intensive task of addressing. That requires a free software upgrade to 3Com Fast Ethernet adapter cards for servers.

A 3Com official acknowledged that the approach is proprietary and that users will need to add a driver to their Fast Ethernet server adapter cards.

"It's going to let us split the [network interface card] market," predicted Scott Lindsay, director of marketing at 3Com. "We're not going to patent it or charge for it. The other player that may want it is Intel."

The new Token Ring-to-Fast Ethernet module, which costs $1,500, slides into the SuperStack II Switch 2000 and supports twisted-pair wire and fiber-optic cable.

3Com officials said it is cheaper to use the Fast Ethernet module to link switches to servers than Fiber Distributed Data Interface (FDDI) or Asynchronous Transfer Mode (ATM) links.

An FDDI server link costs $4,000 to $12,000, and an ATM server link costs $3,000 to $8,000, 3Com officials said.

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## COMMENTARY

# The security biz: Good work if you can get it

### *David Coursey*

**Call me paranoid, but I've always had a deep-seated suspicion that the people who write computer viruses are the same people who write the antivirus software that protects us from the people who write computer viruses. Or vice versa.**

Perhaps the two sides, if not the same people, are close, personal friends. And the IS departments that spend big bucks on antivirus software are essentially innocent bystanders, caught in the middle of a game being played by others. Spy vs. Spy, writ large.

I mention this so you'll understand that I think security is a game — the good guys struggle to stay one step ahead of the bad guys and never quite succeed.

On top of this, computer security is a black art to most people, myself included.

Even if you understand how TCP/IP works, securing your site requires that you be smarter than people who understand TCP/IP *and* want to ruin your day.

Security purchases, whether antivirus software or an expensive Internet firewall, are made out of fear. And vendors do their best to keep IS somewhere between very concerned and very afraid.

Those vendors also don't want you to know what they're up to, lest the bad guys learn their tricks. Or so they say, although much of what they do seems to qualify as common sense.

Knowledge is power, however, and the firewall companies are security consultants who turn this knowledge into cash.

Sound like a bit of a scam? Well, W. C. Fields would be right at home in the computer security business.

Vendors and consultants deal a poker hand in which only they know the cards. All the customers know is that they'd better not lose. At the end of the game, IS has been strung along — never quite losing but not winning, either — and the dealer has almost all the chips.

So do what you can, but make no mistake: Most companies will never be able to spend enough money or develop the right skill set to protect their network from a concerted attack by a motivated attacker.

Sure, you may be able to persuade a joyrider to roust somebody else, but if the professionals want you, they can find a way. All you can do is raise the ante.

Corporate customers face another terrible choice: You can have an open, easy-to-use network or you can have a secure network, but you can't really have both. Every move toward security requires a move away from user friendliness; at least for some of your users. That will improve over time, but until security and traceability become priorities, the problems will only get worse.

Reaching international agreements that provide for the extradition of computer criminals — and then exercising them regularly — might help.

#### SAFETY FIRST

It's a sad comment on our world that high-grade security has to go in before, to quote the old TV commercial, "the name goes on." If the creators of cellular telephones had realized how easy it would be for thieves to clone phones, they might have done things differently.

Likewise, the Internet was created through a series of formal and informal agreements — mostly of goodwill. The Internet wasn't designed to be very secure, and now we're paying the price — in the millions.

*Coursey is a consultant, analyst and editor/publisher of "coursey.com," an electronic newsletter at www.coursey.com. His Internet address is david@coursey.com.*

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# Taking the long view on IS expertise

### *Charles Babcock*

**I recently spoke to a group of Silicon Valley technical recruiters and told them they'd soon be looking for laid-off Cobol programmers to help deal with the year 2000 problem. When you find them, I predicted, they'll come back — but with "an attitude." This line drew a laugh, which surprised me.**

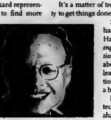
It's always been obvious to me that Cobol programmers represented the competence of an earlier age. They might be out of fashion, but that is different from being hopelessly out of step.

They were systems people who understood their businesses. They knew what data meant in relation to business processes. Then, in the name of business process re-engineering, they were downsized.

Now their former companies want them back. In my opinion, many of them never should have been laid off.

The recruiters understood instantly. They told me they struggle with a demand for technical staff that now exceeds supply.

Oracle needs 100 new people each month and has for so long that it's become routine. Hewlett-Packard representatives said they struggle to find more than 1,000 people each month, which raises a larger issue for organizations everywhere.



How do you retain good staffers, even if they are a bit long-in-the-tooth, when the needs of your company change?

Some individuals adapt on their own. Scratch five of your client/server experts, and at least one will turn out to be a former Cobol programmer. Tap your intranet builders, and you're likely to find former client/server staff.

But organizations shouldn't rely solely on spot initiative to manage these migrations. We must start to view successive waves of technology as evolutionary, not revolutionary. A great deal of what was learned in an earlier era remains pertinent in a new context.

In the midst of the PC revolution, the IBM mainframe continued to grow in processing power, and by the way, those mainframers know how to back up and recover systems.

It's a matter of trendiness vs. the ability to get things done.

So, if you're feeling hammered by Michael Hammer, author of *Re-engineering the Corporation*, you might think about ways to get to a leaner, flatter organization other than issuing a bunch of pink slips.

People who share technical skills often share hidden channels of communication.

They share unspoken understandings about how the company works and insights into what data is needed for a new system. Those qualities are needed in adopting new technologies.

These forms of communication don't take place by executive fiat after a bout of re-engineering, especially when the people sitting next to each other are all new.

When Visa International wanted to get an early jump on its year 2000 problem, it relied on in-house staffers more than outside consultants. I've seen the example repeated by managers building data warehouse applications and other new systems.

If you want to do more with less, how about doing more with the expertise you've already got? If the people aren't thinking creatively, find a spark plug within their ranks that you can elevate. Any group will think more creatively if its members aren't engaged in reapplying for their jobs.

Re-engineering doesn't have to get ruled out. But it should be part of an approach that capitalizes on core competencies and existing knowledge, translated into new systems.

If your existing people generate more revenue, you have a de facto leaner (though probably not meaner) organization — one that could do it again.

*Babcock is* Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.*

The Back Page

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Dispatches & images from the fringes of the electronic frontier

### Patent watch

*Recently issued U.S. patents (Patent number, inventor/assignee, date issued)*

Programmable robotic system that guides the blade of a surgical saw (or drill) so it can make precise cuts (or holes) in bones during orthopedic surgery. The device can be used in total knee reconstruction for "affixing a plate, screw, nail or prosthesis to bone." (5,571,110, University of Washington, Nov. 5)

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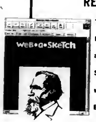

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IF YOUR WEB site is ever mentioned in the national press, be prepared for the onslaught. The Library of Congress World Wide Web site was featured in a Sept. 29 *Parade* magazine article, and the servers were swamped with visitors that Sunday. The number of hits was six times higher than the previous Sunday.

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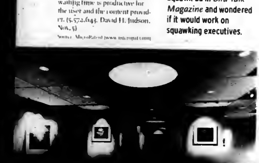

It looks real, but it's actually computer art enhanced by software from Lightscape Technologies in San Jose, Calif. Lightscape uses "radiosity" algorithms for ultrarealistic lighting effects.

# Inside Lines

## We build power plants, airports and ... date fields

That could be the motto for engineering and construction giant Bechtel Group if, as rumored, the company enters the fast-growing year 2000 market. Bechtel supposedly hopes that with its experience managing large, complex construction and engineering projects worldwide, it can do the same for less-disciplined information systems shops.

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Sybase has started doing some hush-hush advance briefings about an upcoming update of its SQL Server 11 database, code-named Griffin. The release is expected to include parallel query support and other new features. But Sybase officials last week said users shouldn't count on seeing Griffin for a while. The company's developers are focusing on slapping together Unix versions of a database and tools bundle for Windows NT that will be announced this week. The Unix bundles are expected in the first half of next year.

## Building a bigger mailbag

Microsoft Exchange's 16G-byte limit on mail storage won't be expanded when Version 5.0 ships in the first quarter next year. But sources close to the company said Microsoft will ship a fix about 45 days later that expands the storage capacity to 16T bytes.

## Bandwidth bloat

Dozens of vendors seek to conserve precious bandwidth of the Internet and corporate intranets through an emerging network technology called IP Multicast, which slashes communication overhead by efficiently focusing mass-distribution messages. But proponents wound up contributing to the problem last week by botching an electronic-mail announcement about the IP Multicast Summit to be held Jan. 16 in Santa Clara, Calif. Everyone on the distribution list also received every error report and returned message from failed delivery attempts, plus the ensuing complaints from those on the list whose in-boxes were flooded. Better not let push come to shove — pull the information yourself from www.ipmulticast.com.

## Story of O

Outsourcing is still a spooky word in many IS shops, and that was no more evident than during a teleconference last week to announce Du Pont's $4 billion, 10-year deal. Du Pont Chief Information Officer Cinda Hallman did everything possible to avoid using the "O" word and instead used terms such as "alliance" and "services." After several members of the press repeatedly described the Du Pont deal as an outsourcing contract, Computer Sciences President and CEO Van B. Honeycutt stepped in to say, "This is not outsourcing; this is a technical partnership." Whatever.

## A few good traders

The Marines are convinced that the next battlefield is on the digital frontier. That's why "The Few, The Proud," joined forces with traders last week (Dec. 9) at the New York Mercantile Exchange for Traders III, the third installment in a series of war games and exercises that were designed to explore decision-making on the trading floor.

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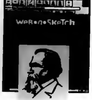

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DESIGN VISUALIZATION PARTNERS

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## Sybase throttles back on database update

Sybase has started doing some hush-hush advance briefings about an upcoming update of its SQL Server 11 database, code-named Griffin. The release is expected to include parallel query support and other new features. But Sybase officials last week said users shouldn't count on seeing Griffin for a while. The company's developers are focusing on slapping together Unix versions of a database and tools bundle for Windows NT that will be announced this week. The Unix bundles are expected in the first half of next year.

## Building a bigger mailbag

Microsoft Exchange's 16G-byte limit on mail storage won't be expanded when Version 5.0 ships in the first quarter next year. But sources close to the company said Microsoft will ship a fix about 45 days later that expands the storage capacity to 16T bytes.

## Bandwidth blast

Dozens of vendors seek to conserve precious bandwidth of the Internet and corporate intranets through an emerging network technology called IP Multicast, which slashes communication overhead by efficiently focusing mass-distribution messages. But proponents wound up contributing to the problem last week by botching an electronic-mail announcement about the IP Multicast Summit to be held Jan. 16 in Santa Clara, Calif. Everyone on the distribution list also received every error report and returned message from failed delivery attempts, plus the ensuing complaints from those on the list whose in-boxes were flooded. Better not let push come to shove — pull the information yourself from www.ipmulticast.com.

## Story of O

Outsourcing is still a spooky word in many IS shops, and that was no more evident than during a teleconference last week to announce Du Pont's $4 billion, 10-year deal. Du Pont Chief Information Officer Cinda Hallman did everything possible to avoid using the "O" word and instead used terms such as "alliance" and "services." After several members of the press repeatedly described the Du Pont deal as an outsourcing contract, Computer Sciences President and CEO Van B. Honeycutt stepped in to say, "This is not outsourcing; this is a technical partnership." Whatever.

## A few good traders

The Marines are convinced that the next battlefield is on the digital frontier. That's why "The Few, The Proud," joined forces with traders last week (Dec. 9) at the New York Mercantile Exchange for Traders III, the third installment in a series of war games and exercises that were designed to explore decision-making on the trading floor.

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